



January, 1951

25 Cents

The Green Thumb

COLORADO'S GARDEN MAGAZINE



SPANISH-ENGLISH GARDENS

CLIMATE CONTROL

THE EXPERTS' GARDENS

FOURTH ROCKY MOUNTAIN HORTICULTURAL CONFERENCE

*Sponsored by The Colorado Forestry & Horticulture Association and
the Botany Department of the University of Denver*

To Be Held in Denver University's New Class Room Building
at 15th Street and Cleveland Place

January 2 and 3, 1951

All Sessions, \$1.50; Single Sessions, 75c

PROGRAM

TUESDAY MORNING, JANUARY 2

Dr. A. C. Hildreth, Chairman

- 9:00—Registration.
- 9:45—Welcome by President Mrs. John Evans.
Announcements
- 10:00—"Reading the Landscape," by May Theilgaard Watts.
- 10:45—Intermission of half hour.
See Exhibits, Garden Clinic and Movies.
The garden clinic will have experts on plant diseases, insect pests and
cultural problems. Discuss your questions with them at any inter-
mission.
- 11:15—Professional Section (Maurice Marshall, chairman).
"Plant Breeding Possibilities and Techniques for Western Horticul-
ture," by S. W. Edgecombe of Utah State College.
- 11:15—Amateur Section.
"Make and Use Compost for Better Lawns and Gardens," by a Panel
of Experts.
- 12:15—Luncheon Hour.

TUESDAY AFTERNOON

Professor A. M. Binkley, Chairman

- 1:30—"Bees, Flowers and Plant Breeding," by S. W. Edgecombe of Utah
State College.
- 2:30—Intermission.
- 3:00—Professional Section (Maurice Marshall, chairman).
"Weed, Insect and Disease Control by Chemicals," by Wm. Van
Pelt of the Chemical Corp.
- 3:00—Amateur Section.
Rose Symposium given by Members of the Home Garden Club.
- 3:00—Nature Leader's Section.
"How to Interest Children in Nature," by May Theilgaard Watts.

TUESDAY EVENING

6:30—Buffet Dinner at D.U. Building, \$2.00.

Brief Business session.

New films on Australia by Alfred Bailey of the Denver Museum of Natural History.

WEDNESDAY MORNING, JANUARY 3

Fred Johnson, Chairman

9:30—Announcements.

9:45—"Along the Garden Path," by May Theilgaard Watts.

10:15—"Making Our Highways Attractive," Pictures shown by Sam Huddleston.

10:45—Intermission.

11:15—Professional Section (Maurice Marshall, chairman).

"Tree Selection and Placing Problems in a Growing City," by Representatives from the City Forester's Office and the Public Service Co.

11:15—Amateur Section.

"Control of Insects in Home Gardens," by Wm. Van Pelt of the Chemical Corp.

12:15—Luncheon Hour.

WEDNESDAY AFTERNOON

1:30—Outdoor Demonstrations of Sprayers, Power Saws and Other Tools. Contests of Skill Among Arboriculturists. Will be held at Northwest Corner of City Park, weather permitting; otherwise in City Park Greenhouse.

WEDNESDAY EVENING

6:30—Treemen's and Nurserymen's Dinner—to be held at the Auditorium Hotel, 14th Street and Stout.

Mrs. Watts and Dr. Edgecombe are our feature, out-of-state speakers this year. Mrs. Watts is a naturalist at the Morton Arboretum, near Chicago. She is nationally known for her educational work with children and adults, having worked out some very effective ways of interesting all kinds of people in Nature.

Dr. Edgecombe was formerly with Iowa State College, Horticulture Department, and has conducted research for the Burpee Seed Co. He is now head of the Horticulture Department of the Utah State College. He has had a wide range of experience in plant breeding and is a most interesting speaker.

**If You Own Just a Tree or Have a Full Scale Garden
YOU CAN'T MISS THIS CONFERENCE**

The Green Thumb

Vol. 8

JANUARY, 1951

No. 1

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

1355 Bannock Street • Denver 4, Colorado • TAbor 3410



Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

OFFICERS

President.....Mrs. John Evans
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 Secretary.....Mrs. A. L. Barbour
 Treasurer.....Mildred Cook

JANUARY SCHEDULE

Jan. 14 and 28. Sundays. Snowshoe Nature Hikes. Leave Horticulture House, 8:30 A.M. Bring either snowshoes or skis, warm clothing and lunch. Register in advance to assure transportation. First trip to Urad Mine and Hassel Lake, and second to Apex and American City ghost towns.

Jan. 18. Horticulture House, 8 P.M.

Yugoslavia and Tito—will be the subject before the Horticulture and Forestry Assn. on Thursday, January 18th, at eight o'clock in the evening, when Mr. Benjamin E. Sweet, Denver attorney, brings us a most interesting account of his investigations there in the spring of 1950.

This topic may seem to be somewhat foreign to the usual program subjects offered at Horticulture House, but our chance to have peaceful gardens in Denver *can* be more closely connected with the affairs of Tito and the rest of the world than we like to think. It should be remembered that when the Roman civilization fell to pieces it was almost a thousand years before gardens flourished freely again in the world.

Since space at Horticulture House is limited, tickets will be sold for this particular talk. The price is 75c per

person. The money so collected will be donated to the library fund of the Association. Tickets may be secured from Mrs. Helen Fowler, at Horticulture House, or from Mrs. Moras Shubert.

It is very encouraging to us to note the large number of members who voluntarily send in their renewals for the larger classes of memberships. Some may wonder why we encourage more members to join at the minimum rate of \$3.00 when that does not cover the cost of even publishing this magazine. It must be remembered that this Association is not organized for profit, and some of us who believe in its objectives are willing to put up the extra money to balance the budget, temporarily, hoping that we will collect a large number of loyal members who will eventually appreciate the work sufficiently to be willing to put it on a self-supporting basis.

If you have been helped by the garden articles in the Green Thumb or if you believe in the community-wide improvements that the magazine advocates, tell your neighbors and business associates about it. The larger membership we have the more good we can do.



A garden in Santa Fe, New Mexico, showing the Spanish influence

COLORADO CROSSROADS

By JOAN PARRY

TWO main influences can be traced throughout the great majority of gardens in Colorado; the English and the Spanish. Before the discovery of North America by Europeans, the Indians grew plants for their value as food and medicine, and were not concerned with gardens as we know them.

The Spanish explorers were the first to write enthusiastically about the flowers they found along the southern coastline, and among them were such favorites as beebalm named for the Spanish botanist Nicholas Monardes who first illustrated the flower in his book published in 1571, and the California poppy that had to wait nearly three hundred years before it was so named as the emblem of that State.

The Spaniards naturally built Spanish type houses where they colonized, together with the patio garden that since those early days has been recognized throughout the south, the southwestern and southeastern seaboard as the most practical. And these patio gardens were not only practical, they were also beautiful and were the perfect compliment to the architecture that matched the landscape so superbly that it appeared "to belong".

In arid country where green grass is difficult to establish and costly to maintain, brick and stone or gravelled paths and courtyards are excellent substitutes, and they are the best groundwork on which to stand great tubs and pots of trees and plants. Water, if a luxury, can be used over

and over again, and the sight and sound of it playing over a rock, or thrown from a small fountain, or even a small trickle from a wall fountain are refreshing both for mind and body.

It is small wonder, therefore, that various forms of patio gardens are found throughout the territory the Spaniards conquered, and even in some of the great northern cities this style of garden has been perfectly adapted, notably in the roof gardens of New York.

Later, when America emerged as a new nation she thrust out westwards, and brought with her from the eastern seaboard the English influence of the colonists of New England, New York and Virginia. In direct contrast to the Spanish influence, the English influence might be called predominantly green: green

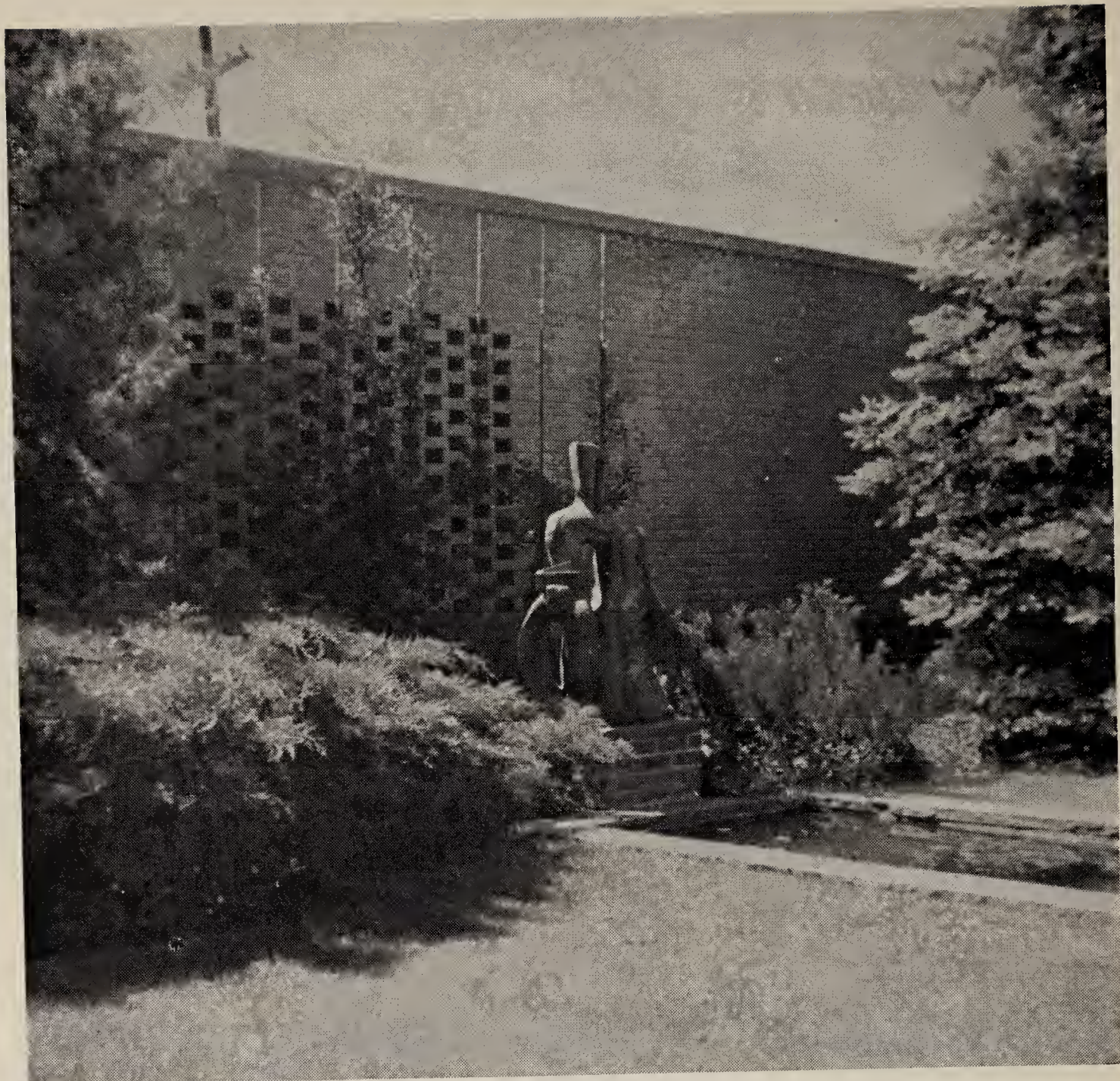
lawns, shade trees and hedges—though these last have never yet been used unfailingly as have grass lawns.

Colorado is the crossroads between the Spanish and English influences. And it is interesting that, although the landscape is naturally arid, the English love of green predominates perhaps because so many English and other Europeans settled here in the city's early days.

So Denver wrestles with its gardens. By nature grey not green is the color that belongs to landscape and blue skies of Colorado. You find it in the desert plants, in the bark and twigs of aspen and mountain mahogany of the higher land, in the cottonwood, willows and scrub oak, rabbit bush and sages, the lead plant and the mullens of the lower slopes. It is the reason for the immigrant Russian olive making itself so at home

A garden in Denver, Colorado, showing the English influence.





The Havens garden, in Denver, showing the influence of both the English and Spanish.

in hedge and tree, however it is used. Even among the evergreens it is the grey tones that make them so distinctively belonging to Colorado, the Douglas fir, the junipers and the lovely silver spruce.

Yet Denver longs for green as men of the desert long for the oasis. Green has challenged grey, and like most challenges, green has won. Green lawns and trees are inseparable from the thought of Denver. This perhaps explains why the most generally typical western garden, at the moment, has lawn for the front garden, and a partially hedged backyard of grass and flowers with a back porch, which is in reality an adapted form of the patio.

What may the characteristic Colorado garden of the future be like? Probably it will take the best from both the English and Spanish influences, and develop its own individual style. There are indications that Colorado gardeners on account of the more severe climate will make a further adaptation of the California style, which was the first adaptation of the patio proper.

Will the ranch type of house and garden be the answer? A house and garden designed to take advantage of shade for summer and sun for winter; a simple planned area of grass and stone, blending the house to the garden, and the garden to the landscape beyond?

LET ME SMELL YOUR GARDEN

By M. WALTER PESMAN

MY TWO most pleasant garden memories are connected with fragrance: a garden tour of Italy and the San Francisco World's Fair.

In both cases I was hardly conscious of what was happening to me; I only knew that I was carried away by a beauty that went down deep. Then I realized: I was touched by a sensation that was more ancient than that of vision. The sense of smell can hardly be underestimated in garden appreciation.

Does that mean we should make our garden a collection of sweet smelling herbs, or a conglomeration of various fragrances? No. Rather should we, more or less casually, introduce those plants that perfume the air without ostentation. In San Francisco it was stocks and wallflowers, while I was there; in Italy sweet-scented shrubs.

Thyme planted along a garden path where you are apt to step on it, will give that accidental touch; you may become conscious of it or not, it makes no difference, the emotional response is the same.

In mowing the lawn I cut some mint that was reaching out too far: it was a pleasant reminder. A single bush of Koreanspice *Virburnum* will perfume the air for yards and yards.

It is quite impossible to list all the fragrant garden plants, all the more so because different regions have different possibilities. In the South they can have jasmine, oleander, gardenia, magnolia, and various azaleas, farther north lilacs, mockoranges and honeysuckles have to take their place.

Almost any garden can use fragrant annuals: sweet alyssum, heliotrope, stock, mignonette, sweet pea come to mind immediately. Some of the newly developed nasturtiums and marigolds

are pleasant. Petunias?

Well, of course, there is no accounting for different people's tastes. A friend of mine delights in smelling a skunk in the neighborhood. A farmer is apt to be critical of the city dude who is critical of the barnyard smell. You may, or you may not like petunias, and that holds for chrysanthemums.

Particularly pleasant is the sweet aroma that may pervade the air at night if there is a patch of ethereal-looking nicotianas. Tuberoses may be especially fragrant at night. I was agreeably surprised one evening when I had taken a large branch of Evening Star Flower in my room, and as it opened up, a strong sweet perfume drew my attention to the event. Most night-blooming flowers are not only of a conspicuous white color but give off an aroma to attract night-flying insects.

Now to come back to that herb garden. So much has been written of late about herbs that it would be merely a re-hash to stress their fragrance. They are not as important for spreading this intangible allure as they are for tasting purposes. True enough, every one is fragrant on being crushed, but who wants to go about the garden nipping at herbs — and sniffing?

And finally we might devote a line to such animal-attractions as catnip and dog-loved juniper. Most garden lovers would prefer, I am afraid, to keep both dogs and cats at a larger distance from garden plants. Would a planting of dogbane and henbane be effective in keeping away these respective animals?

As for me, give me roses and lilies and I'll take a chance.

TEN WAYS TO CONTROL THE CLIMATE AROUND YOUR HOME

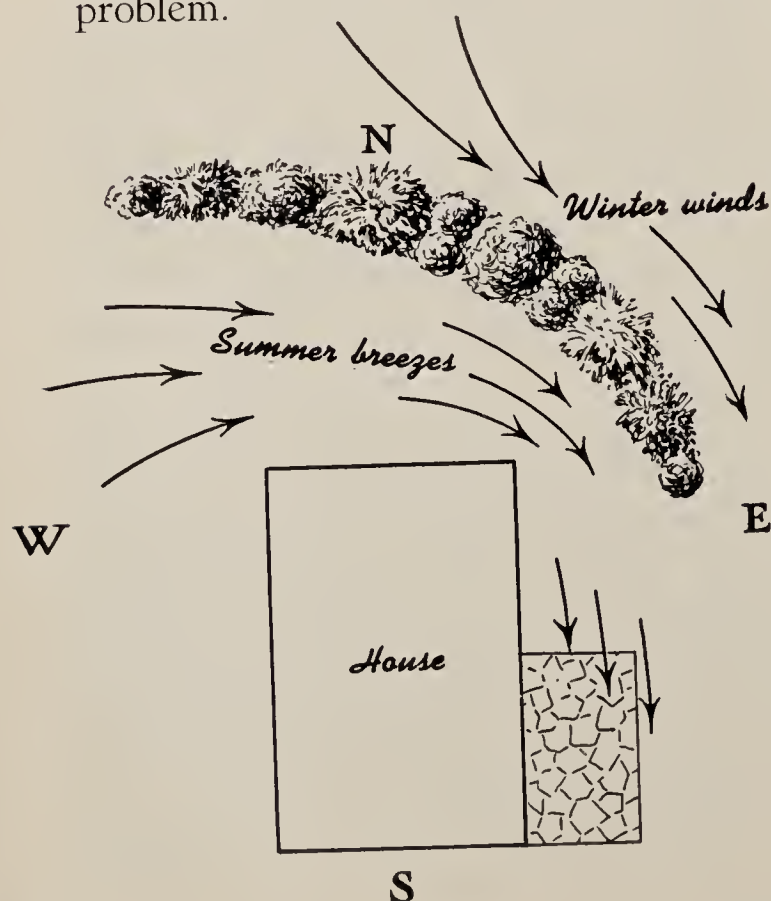
Prepared by

THE AMERICAN ASSOCIATION OF NURSERYMEN

Washington, D. C.

THERE are many ingenious ways for controlling climate on the average-sized house lot, as well as on the large estate or farm. By use of various planting devices, in which nurserymen are especially trained, you can make your house more comfortable both winter and summer, make your outdoor life more pleasant and enjoyable. Nobody likes to be cold in winter or hot in summer and these extremes can be moderated to considerable extent by proper plantings. At the same time you can save on fuel bills, and assure better living for the family.

Climate control by planting can moderate temperatures in some instances up to 10 or 15° F., thus meaning the difference between comfort and discomfort. Often the cost can be amortized by fuel saving alone in areas where cold winds are a winter problem.



Keep Your Home Warmer in Winter, Cooler in Summer

In many areas of the country, the coldest winds come from the north, northeast, and northwest. In the summer, on the other hand, they usually emanate from the west, southwest or south. By curved plantings of evergreen trees and shrubs in the form of a high hedge, the wintry blasts from the north can be guided around your home. This type of planting can save considerable fuel in the winter. If the windbreak reduces the wind from 12 to 3 miles per hour at 32 degrees Fahrenheit, it will take only half the amount of fuel to heat your house. In fact, the fuel requirement is a little larger for the combination of 32 degrees and a 12-mile wind than it is for zero temperature and a 3-mile wind. In a state experiment station test of a windbreak, it was shown that the fuel cost was reduced 22.9 per cent.

By the same token, in the summer, when you want the breezes from the west they will be guided into a pocket. The same amount of air entering the wide opening toward the west will be forced through the narrow space between your house and the planting, thus increasing both the air movement and the coolness. An outdoor terrace on the east then will be cooler on hot summer nights.

In areas where conditions differ from the above, by observing the direction of prevailing winds in both summer and winter, the same idea can be carried out.

In rural areas shelter belts have long been used to protect fields from soil erosion, to keep them from drying out, and to increase production. The average estimated gain in production on a farm is valued at \$60 per year. The same type of wind-break or hedge on a smaller scale can protect your flowers, or home fruit garden, as well as increase production, especially where wind is a problem.



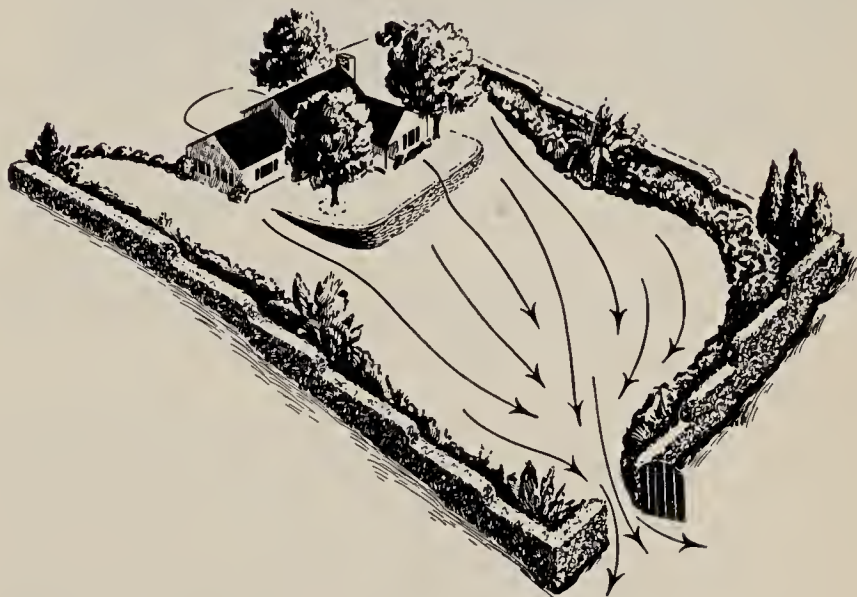
Properly Directed Shade Makes Your House More Liveable

In the summer the sun sets in the northwest in the temperate zone and nearer to due west as one goes south. The hottest part of the day is in the early afternoon, when the more direct rays of the sun strike the roof of the house. Later in the afternoon, the rays pour directly on the west wall of the house, heating it to an uncomfortable degree.

A tree located to shade the wall and roof in the afternoon will keep house temperatures more comfortable, may reduce the wall and roof temperatures by as much as 20 to 40° Fahrenheit. This helps to eliminate the well-known "attic furnace." Roof-top temperatures of 140 degrees have been recorded. By having a tree shade the west wall and roof of the house you will be protected from the hot sun when and where you most require such protection. Likewise, you

can plant different kinds of trees, such as fruit, or other flowering trees around your property to give you shade where you want it, at the time of the year you most desire it.

In the spring, fall and winter, the tree shading your house will not interfere with the sun, which at that time sets in the southwest. Moreover, by use of a tree which sheds its leaves the sun will be certain to shine on the property during the cold season when you need all the natural warmth you can obtain.



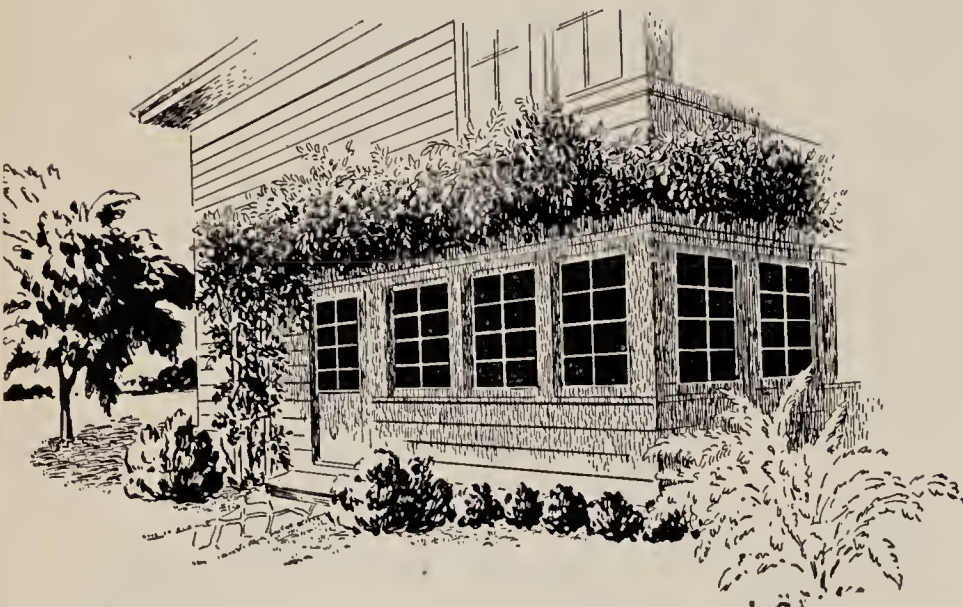
Make Cold Air Flow Away in Winter, But Pocket It in Summer

Cold air, like water, flows downward and settles at the lowest point. Early frost sometimes flows in a layer two or three inches above the ground. It requires only a slope of a foot or so on a lot to set up this air movement. In the average yard frost pockets can be eliminated by a gate in the hedge on the lower side of the garden. The coldest air will flow out through the gate. Where there is good air movement the tender buds of many plants are less liable to damage from cold.

Some of the earlier frosts in the fall and the late frosts in the spring can be prevented in this way. Conversely, in the summer, by keeping

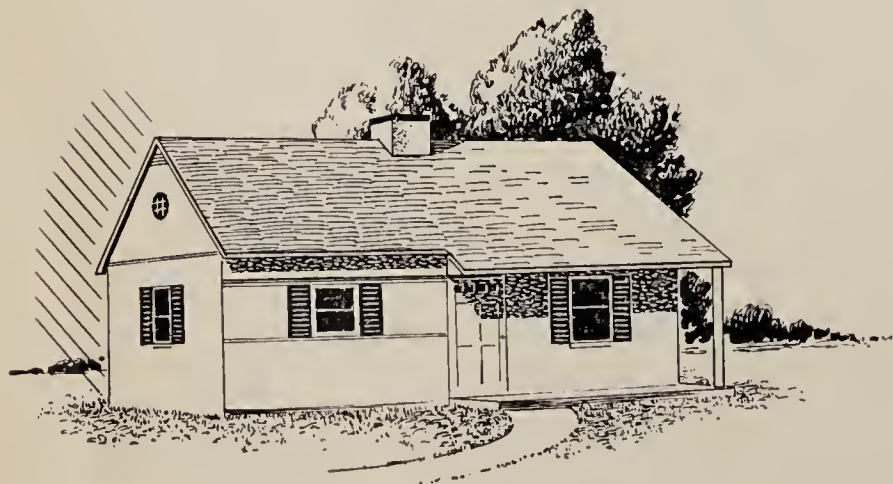
the gate closed a cool pocket of air will collect on the lower side of the garden, thus making a cool place to sit on hot summer nights.

Some hedge plants need not be formally clipped, if this is preferred.



Nature Regulates Sun in Windows With a "Plant Awning"

"Plant awnings" help to add beauty and graceful living to your home. In the summer time when in full leaf they shade the windows. In winter, providing you use a plant that sheds its leaves, you get the full sun. Either a trellis may be used, or a wire netting close to the house above the window. And for extra measure you can use a vine which provides colorful flowers and adds a splash of brilliance to the house, or even delicious grapes which make the mouth water as they ripen in the fall.



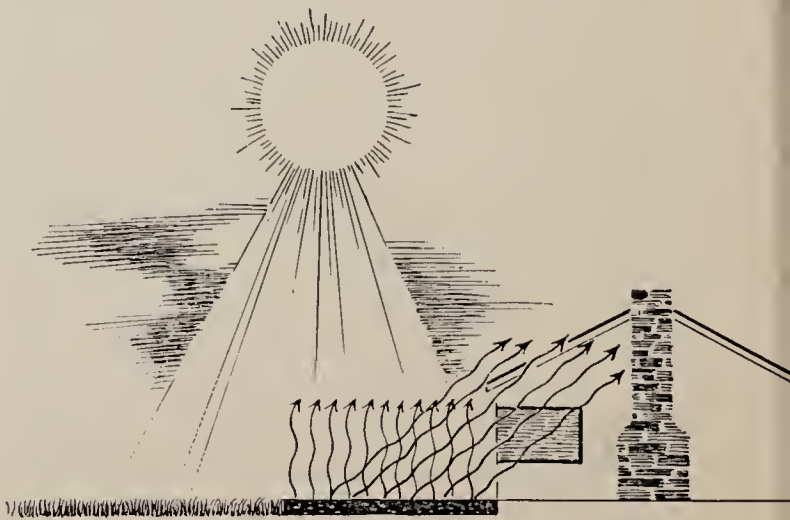
Plants Make the Sun Work With You, Not Against You

There are many ways to make the sun work with you. Shrubbbery and lawns may do this, especially by keeping you cooler in summer. The temperature of plants is many degrees cooler than that of pavement in the hot sun. By use of shrubbbery and grass the rays of the sun are not reflected against the house from the pavement to make the house doubly hot in summer. Glare, too, is eliminated.

Paved areas store and radiate heat for many hours after sundown and may cause stifling conditions in the house at night, making sleep difficult. Plants, on the other hand, transpire and evaporation of the moisture rising from them makes the air cooler.



Noise and dust are absorbed by shrubbbery and lawns. A test in one large city revealed that the dust count on the leeward side of a planted area was reduced by 75 per cent.



Wall Plants Make the House More Comfortable

Often we see solid walls of a wood, brick or stucco house out in the sun where they absorb the full blast of the sun's heat. The heat is stored all through the house to cause many sleepless nights. Where this situation exists, vines, shrubs or espaliered plants provide cooler house walls in the summer, and if they are the kind that shed their leaves, give the house the full benefit of the sun's warmth in winter.



Espalier trees beside the house walls can also provide delightful blooms, ornamental or edible fruits. If vines are used, they may be colorful, as in the case of climbing roses.

Trellises of plants along one or more walls will add to beauty as well as utility. They also give your home an air of graciousness, eliminate that bare look which all home lovers try to avoid. Plants can create a beautiful pictorial effect on your outside walls.

Pergolas Cool the House, Add to Comfort

If the pergola is built to keep the sun off the west side of the house it will add to your living comfort by cooling the walls of the house.

Pergolas of flowering vines, such as climbing roses and similar plants, as well as fruits, such as grapes, will



provide cool spots beside the house, in the yard or outdoor living room. Sitting in a cool bower on hot summer nights is a delight for anyone.

An Enclosed Pool of Water Makes the Yard Cooler in Summer

In the part of the yard used for outdoor living in the summer, water can make the area cooler and more liveable on hot summer nights. It

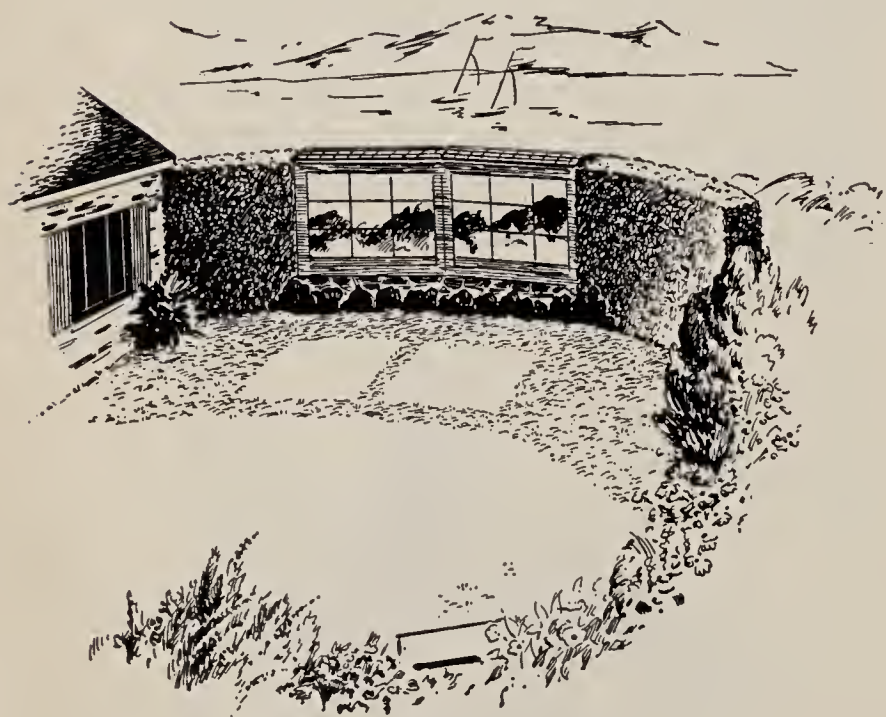


requires large quantities of heat to evaporate water and the resulting cooler air will settle in your outdoor living room, providing you trap it there with hedges and other plantings.



Keep Your Walks Cooler

A solidly paved walk or driveway absorbs as well as reflects heat, and it also causes glare. By making a walk of small squares so that grass grows between them the heat is lowered to considerable extent and glare is reduced.



Windshields Add Comfort in Windy Spots

Where wind is a problem in the enjoyment of a garden, and you still may not want to cut off the view, oftentimes a combination of hedges and glass will solve your difficulty.

Especially is this true where you do not wish to shut off a view of a river, lake, ocean, valley, or other natural vista. One or more windows of glass constructed with a wind-breaking hedge on each side, can be a very striking addition to the outdoor garden which otherwise cannot be enjoyed because of cold winds. One of the great advantages of this treatment is that, by trapping the sun, it also enables you to use the garden in the late spring and early fall.



WEEDKILLERS MAY AFFECT GERMINATION

By Dr. R. Milton Carleton, Director of Vaughan's Garden Research Center

Gardeners who had trouble with germination of grass seed last fall would do well to check what crab grass killer they used last summer. Recent tests at the experimental gardens of Vaughan's Garden Research Center, Western Springs, Ill., showed that some modern crab grass killers are unsafe to use if home lawn makers intend to re-seed soon after the crab grass has been destroyed. When phenyl mercury compounds were applied during August, grass seed sown as late as October 1st germinated poorly. The seed that did sprout made weak growth and did not make a good turf.

Outdoor tests were later repeated in the greenhouse under controlled conditions with the same results. Effects of phenyl mercury crab grass killers were not as serious on sandy soils as on clay or loam. Liquid sprays lost their effects sooner than those applied in dry or dust form.

The effect of 2,4-D was also bad but did not last as long. A combination of 2,4-D with phenyl mercuric

acetate showed severe injury to new seedlings. The effect of 2,4-D is destroyed in about three weeks by soil bacteria, but the mercury compounds kill the bacteria. Mercury is not easy to wash out of soil.

Tests indicated that potassium cyanate or PC is the safest crab grass killer to use when the lawn is to be reseeded within a month or so after treatment. Instead of hurting germination, PC actually stimulates young growth. Clippings from seed plots treated with PC in the Vaughan experiments only an hour before seeding were three times as heavy as those from untreated plots. Treated plots sprayed with PC produced eight times as heavy a cut as those sprayed with a phenyl mercury compound.

COMMON MILKWEED

This plant is interesting in several ways. The milky sap gives it its name, the pods are much valued for winter arrangements and the floss attached to the seeds is a marvel of lightness superior to any similar synthetic product.

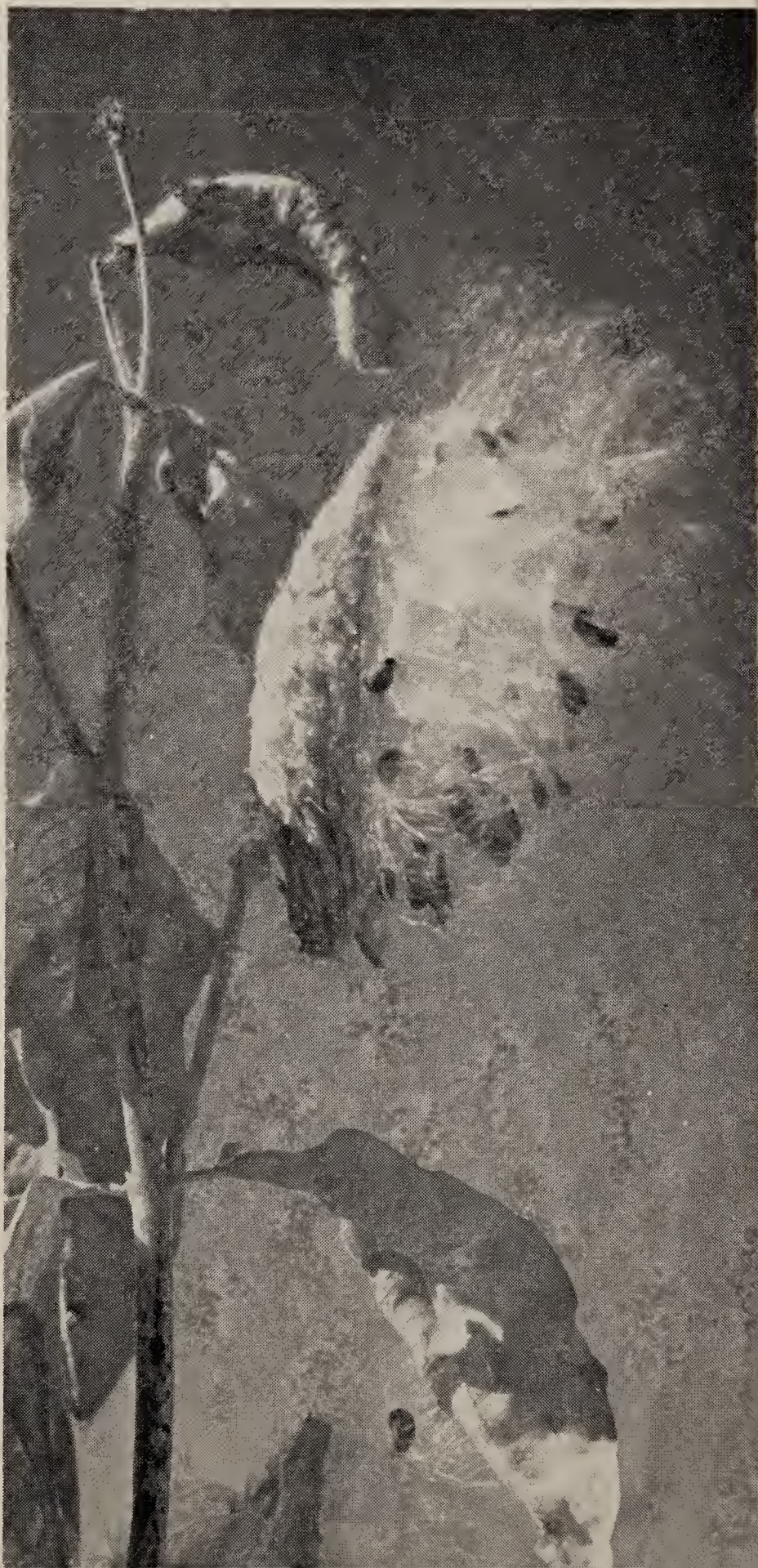
The sun shining on these tiny parachutes gives a glistening effect like that of silk. During our last war school children were urged to collect this floss to be used for life belts and for insulation in Arctic suits. Nature has so arranged these fibers that they hold particles of air around them and make a very buoyant and highly insulating product. Children have enjoyed blowing these seeds and their parachutes around keeping them from landing as long as possible.

The young shoots, leaves and seed pods of the milkweed have been used as a food for many years by the native Indians and early white settlers.

The raw stems and roots are however poisonous. Some have even made sugar from the flowers.

The form of the flowers is very interesting being unlike the make-up of other flowers. Look at one closely the next time they are in bloom.

Usually this plant has been classed as a weed, but it has a number of useful and beautiful characteristics.



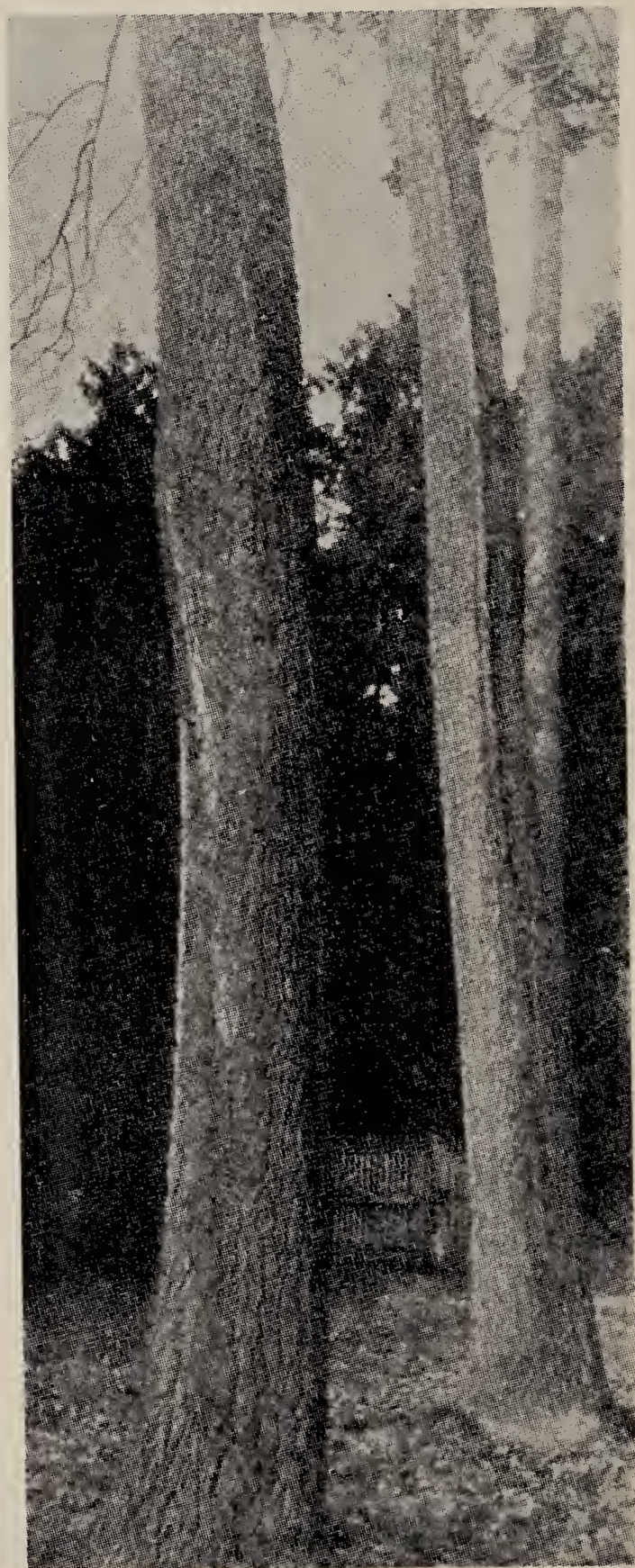
WINTER INJURIES OF SHADE AND ORNAMENTAL TREES

By W. D. THOMAS, JR.

Colorado A & M College, Fort Collins, Colo.

THE common tendency to introduce exotic species into landscape planning is a practice which leads to disappointment. Whenever plants are introduced into an environment other than that to which they are adapted, trouble may result. This difference in environment may be either regional or local. For example, when some of our native tree species are used as shade trees they may be considered exotic to such an environment. The extreme temperature changes in Colorado, together with intense winter sunlight and strong Chinook winds tax our trees to the limit of their tolerance. Consequently, winter kill and frost damage assume the position of being two of the most important disorders of our shade and ornamental trees. Most hardwoods and conifers, especially those growing outside their natural range, are susceptible to freezing injury. The wilting, discoloration and watersoaking of leaves following a killing frost is familiar to all of us. But the darkening of the young bark, followed by a dieback of the tender tips and stems is not so familiar. On larger trees radial frost cracks may originate near the root collar and extend upward into the heartwood; gummosis, or a profuse flow of sap, may accompany such injury. The hardwoods may form callous tissue over these cracks, but often the injury is so severe that several years are required before a satisfactory recovery may result.

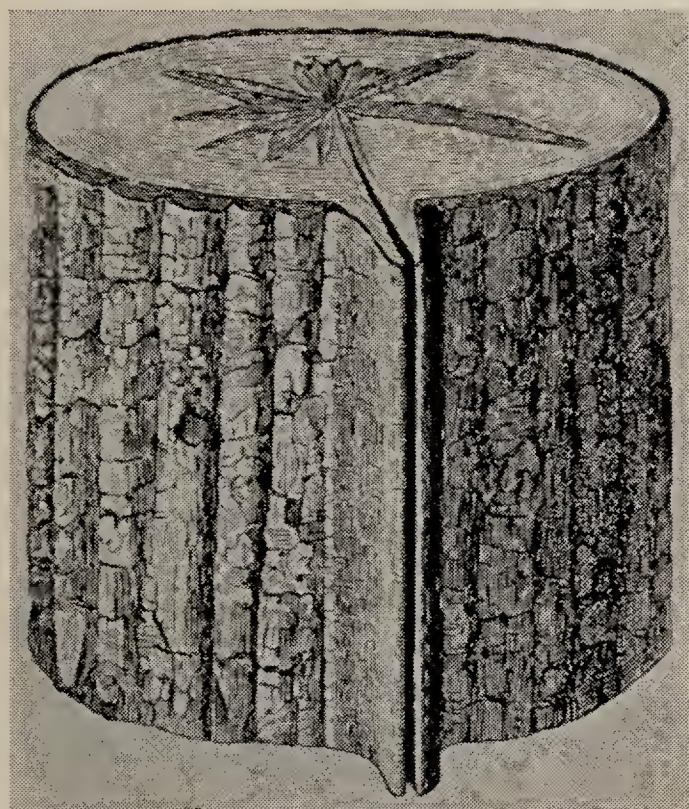
Freezing injury sometimes is not easily ascertained. This is true especially when the roots are affected.



Frost cracks on Scotch Pine.

The primary symptoms of root freezing can be best determined after thawing. They first have a water-

soaked appearance later becoming brown with some disintegration. Because they are more tender, the smaller roots are affected first. Following this injury, the way is free for invasion by soil fungi, some of which are capable of destroying the remaining root system. Under such conditions, the tree may die rapidly; otherwise, the crown will be weak with a stag-head appearance.



Diagrammatic illustration of effect of frost cracks on internal structure of Scotch Pine.

In order to prevent winter injury to young trees it is best to protect young seedlings and transplants by mulching. Nurseries definitely should not be situated in frost pockets or hollows, for the lower temperatures concentrate in such sites. There should be every effort made to use trees within their optimum natural range, selected from frost-hardy stock.

In Colorado and its neighboring states drought injury is commonplace among conifers any season of the year. It is most prevalent following winters in which Chinook winds successively buffet the foothill areas. The result-

ing symptoms showing extensive browning, dying, and casting of the needles is commonly known as "red belt". It develops following excessive transpiration caused by the winds; due to the frozen condition of the ground, the roots are unable to obtain water from the soil. Consequently, a drought condition results. Many trees may be killed outright while others may show a browning only on the windward or sunny side. Here again, mulching may prevent much injury to ornamental conifers such as pine, spruce and fir. Shields of burlap can be placed around trees which are unduly exposed to the prevailing winter winds, thereby protecting them from winter drying.

During the past summer we experienced a common and devastating experience when late snow in June created havoc in the Denver area. The resulting damage was very extensive. The trees hardest hit were those with a spreading type of crown. Other badly damaged trees exposed well-developed cases of heart rot which had resulted from winter injuries and snow breakage from previous years. Such rots weaken trees very severely. Damaged crotches were often the primary reason for the breakage. If the limbs had been repaired or strengthened by bracing, such damage would have been greatly reduced. When damage does occur, repairs should be made with as little delay as possible to prevent the invasion of the wounds by different wood-rotting fungi. Moreover, the trees should be trimmed thoroughly; otherwise, extreme one-sidedness often results. This leads to development of open tops or heavy branches extending far beyond the main body of the crowns. The latter will break off in wind or snow storms or they may break of their own weight.

OUR GARDEN WASN'T IN THE BUDGET

By MYRTLE ROSS DAVIS

THIS is good advice for all new home owners on how to have a garden with little expense. Note that Mrs. Davis saved, not by ordering "bargains" from unknown out-of-town firms, but by growing plants from seedlings or cuttings. Editor.

During the first years of our married life, when the depression was on and our children were young, we didn't have much money to spend but we just *had* to have a garden. Our enthusiasm could be compared to that of opera lovers who hear their opera from the edge of a top gallery seat. We had to hold down the expense but we enjoyed our experience just as much as if we had had parquet seats.

Our garden had small beginnings and it took several years to materialize but the years rolled by quickly and we had real pleasure in watching our little seedlings, root sprouts and cuttings grow into a beautiful and useful garden. We felt that these plants, like our children, were really ours for we had raised them from tiny things. Each one had a history and they meant so much more to us than if we had bought them as large plants.

We were very careful not to fall for the pretty pictures in the eastern catalogues or bargain advertisements—we couldn't afford to waste our money—so when we bought anything we were sure that it was good and that some local nursery or seed store stood behind our purchase.

By studying the articles in garden magazines and attending some lectures on landscaping we learned about garden design. We found that a real garden was an out-door living room,

enclosed so that outsiders couldn't look in. This meant that we must have tall shrubs around the outside border. Then, of course, we knew that we should have color harmony, balance and unity in order to create a beautiful picture.

We also thought that our native plants had a place in our garden and were fortunate in having a friend who owned a mountain ranch which



had a large variety of trees, shrubs and flowers. He invited us to take anything we wanted for our garden so we transplanted dogwood, thimbleberry, chokecherries and sumac.

One of our finest trees, Bristle-cone pine, was salvaged from a new road grade. It was to be destroyed and we were given permission to save its life. Luckily, we had a burlap sack in our car so that we could take it with a ball of dirt and not expose the roots. One year we bought two matched Junipers in pots and used them for twin Christmas trees. We

didn't keep them in the house too long and soon after Christmas planted them in our garden.

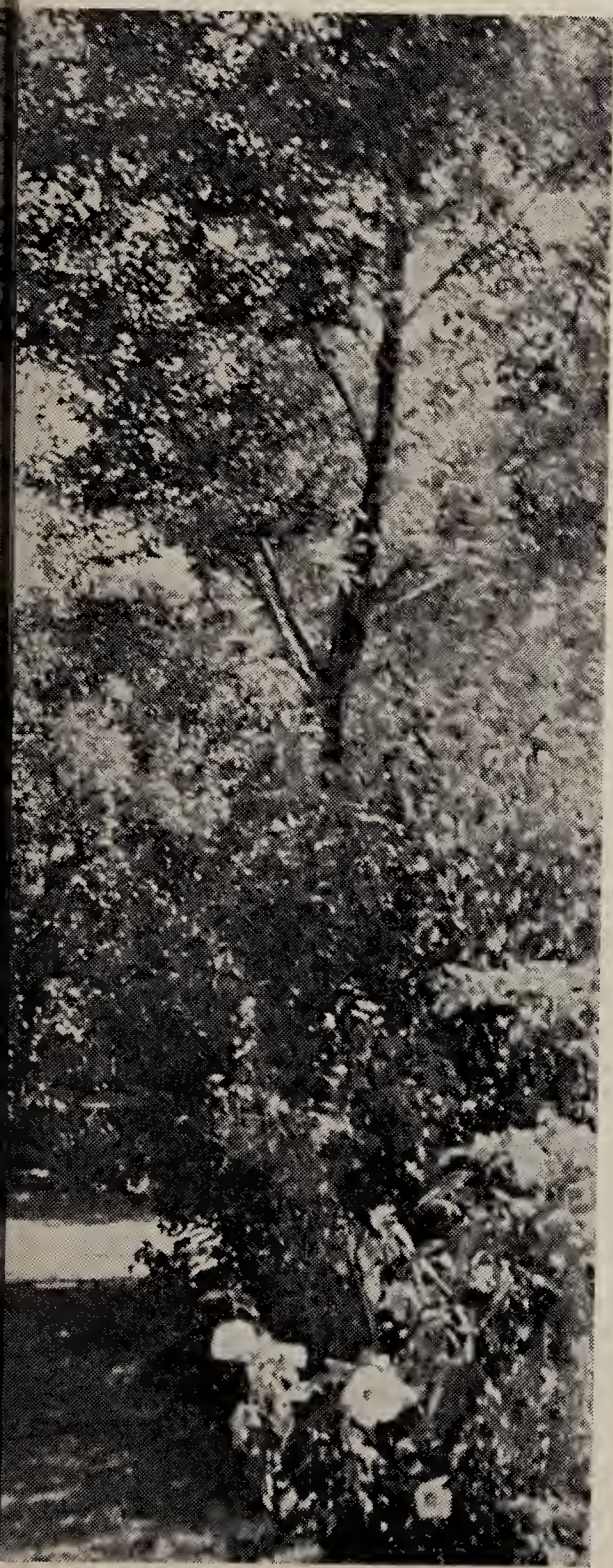
One day in early spring, when our garden was young and barren, I was walking through a nearby park. I saw some root sprouts and seedlings of lilacs, honeysuckle and snowball being dug up and thrown on a trash pile to burn. I wanted them for my garden so I timidly asked the gardener if I might take them home and try to make them live. Of course, he gave them to me and most of them lived and fulfilled their purpose in our tall shrub border.

We bought some inexpensive hybrid tea roses and some climbers but the majority of our roses were grown from stem cuttings. We kept these under jars slightly shaded by other bushes until they had grown enough roots to keep up with the evaporation. If we started our cutting in the fall we kept the jars on until the next June.

Of course, we had those perennials which spread rapidly from their roots and are exchanged among friends and neighbors. Phlox, Shasta daisies, day-lilies, chrysanthemums, lily of the valley and many others come in this class. We had good luck growing delphinium from seed, if we planted it as soon as it was ripe in July or August. We found that the seeds dry out and will not germinate if they are kept around the house long after they are taken out of the seed pod. We also grew Violas, Painted Daisies and Lilies from seed. It was a good inexpensive way to get some choice varieties.

All the trees we had were grown from seedlings. They were a Black Walnut, Quaking Aspen, American Elm, Ash and some Russian Olives.

In the back part of our yard we had a picnic ground equipped with



a fireplace. A few flat rocks from a rock slide, an old fireplace grate from a remodeled house and my husband's masonry did the job. Our family and friends loved the informality of outdoor meals and parties and the fascination of cooking over an open fire.

The ash pit, though a very practical structure in those days, made an unsightly corner in our picnic nook so a little lattice screen was made to hide it. In the opposite corner to balance it, we built that little lath house that I had longed for in which to raise tender primroses and ferns and start seedlings that needed partial shade.

As you expected, we had a rock garden. Like most rock gardens ours wasn't a perfect specimen of landscape architecture. The rocks should have been larger but we were limited by what we could load in our car. They, however, were all the same kind (lichen-covered granite) and they made a good home for our little sedums, saxifrages and sempervivums. A basin shaped rock made an efficient and well-attended bird bath.

Our rock garden furnished a back

ground for our lily pond. The pool was small, just large enough for one water lily plant and was the result of one bag of cement and robbery committed on the baby's sand box.

A flagstone terrace next to the house seemed necessary to us but we found, to our sorrow, that flagstones were rather expensive. However, one day during a walk in the foothills we found some exposed stratified sandstone. The next weekend we got busy and peeled off enough flat rocks to make our terrace.

Our garden, as you can see was built slowly but it was quite satisfactory from the standpoint of beauty and utility. The trees grew large enough to give us plenty of shade and we enjoyed a sense of seclusion from our tall shrubs. It was an interesting and enjoyable experience and later, when we moved to a larger home, we built a new garden and we have used much of the valuable first hand experience we gained from our first little garden which was built with a lot of work but very little money.

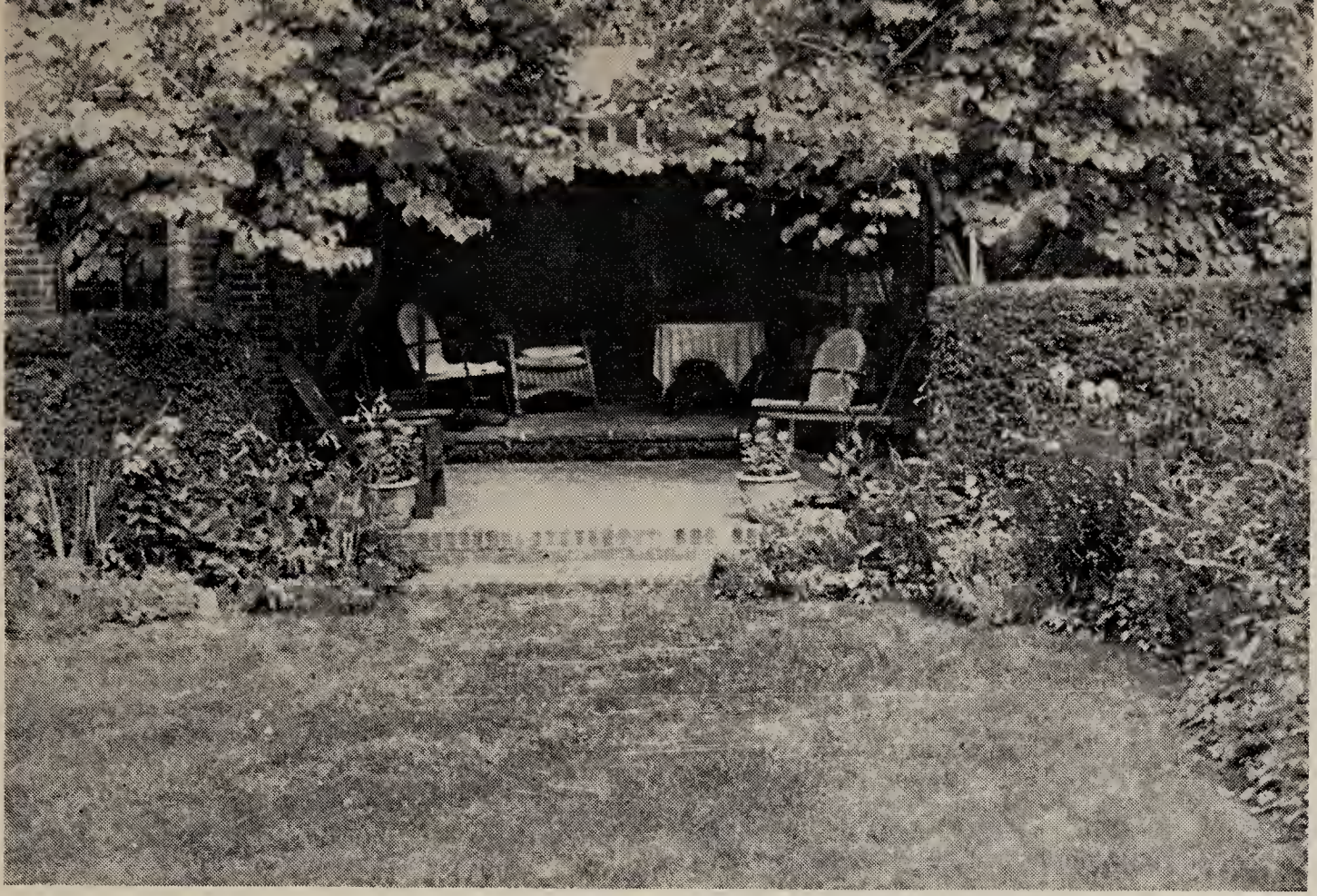
Picture on the back is of the attractive little pool mentioned by Mrs. Davis in this story. Photos by C. Earl Davis.

QUESTIONS AND ANSWERS

How deep should Narcissus be planted and when should planting be done? Longmont.

A good rule to follow seems to be to plant the bulbs at a depth equal to twice the length of the bulb from nose to base. Ripening of the bulb is interfered with if planted too deeply. Regarding the time to plant Narcissus, I do not always practice what I preach, but Narcissus should be in the ground by the end of September. Tulip planting, however, may be put off as late as December or you might take a chance even later if the ground remains open.





THEY PRACTICE WHAT THEY PREACH

By GEORGE W. KELLY

WE HEAR much of the traditional neglect of the blacksmith's horses, the preacher's children and the plumber's bathroom and see occasional examples to make us think that this neglect may also be the rule

among horticulturists. Most landscape architects, nurserymen and park officials, however, are in that business because they like to work with plants and many of them find gardening both a vocation and an avocation.





We are showing here a few outstanding examples of some who really practice what their preach.

The picture on the cover is an interesting detail from the garden of Julia Jane Silverstein, Landscape Architect, who lives at 737 Franklin. She has packed more of garden interest into the small odd spaces around her large house than would be seen in a dozen ordinary gardens. She has not let the "front yard" be simply open lawn to set off the house, but has made of this space a very interesting garden. The side area, along the south, has a great variety of interesting plants and garden features. The formal rear platform and enclosed garden are beautiful all year around, and the otherwise waste space in front of what was once the "barn" makes the restful and intimate little patio shown in the accompanying picture. The outstanding impression given in this garden is that everything is carefully planned to fit in the place that is given to it. Jane enjoys planning delightful gardens for others and she also enjoys her own.

Out south at 835 W. Quincy Avenue in Englewood, Wm. (Big Bill) Lucking has created one of the finest examples of a garden (or rather a series of gardens) to be lived in, that I have seen. There is no waste space in this garden. The design is appropriate for the circumstance, the plants used are all most suitable for the effects desired and the maintenance leaves nothing to be desired. The space in front of the house is enclosed, but is simply planted in a semi-formal design. The main garden is in a circular and sunken effect across the front drive. Here an immense and beautiful old cottonwood tree gives background and frames the wonderful view of the mountains. Behind the house is the really inti-

mate garden leading off from the open porch. Here Bill and Mrs. Lucking can eat or relax in complete privacy.

"Big Bill" has had a varied experience in horticulture, having worked with vegetables, outdoor cut flowers, nurseries and is now the most valued horticulturist in the Denver City Parks Department.

The third set of pictures shows four scenes around the home of John Waugh at 240 Clayton. John Waugh is a gardener, spending his time helping make others gardens beautiful. This garden is a good demonstration of how a small ordinary home grounds may be beautiful and liveable. There is nothing here so elaborate or expensive but that anyone might have a similar place if they cared to give it the excellent planning and maintenance that these folks do. (I suspect that Mrs. Waugh has a great deal to do with keeping up the attractiveness of this place.)

The last two pictures are taken of the front and rear of the home of Maurice Marshall, of the Marshall Nurseries. These views show that Maurice really likes plants and has a real green thumb. It is easy to see that his particular plant hobby is roses, but he loves to experiment with all the nice trees, evergreens and shrubs that he sells other people.

All of these places show the effect of owners who have green thumbs, but they also demonstrate in each instance that the real satisfying gardens are those which have had consideration given to all three of the essentials — good design, appropriate plants and careful maintenance.

These folks (and there are many more) really practice what they preach.



The talks given at the Horticultural conference will benefit every gardener.





*Front and rear view of the home of Mr. and Mrs. Maurice Marshall.
Showing excellent design, use of plant material and maintenance.*



CONSIDER THE POOR CACTUS

In my walking one day, I came upon a cactus in such woeful circumstances that I looked the second time to make sure it was alive. The world depression had done its worst, and together with the drought of the previous summer that was surely bad enough. But things were hardly as serious as they first appeared. Although it was midwinter, there was life under the tangle of spines, but not much activity. This was to be expected; but with no fall rains, the wrinkles which began in summer had gradually settled deeper. Its Indian instinct had pulled the belt a little tighter.

But that was not all. Already there was the anticipation of blossom time, which comes too early in spring for lengthy preparation. Forethought had provided the way. Before autumn had given place to winter, all the leftovers which had been preserved with the strictest economy were brought together, and by processes known only to a cactus had been recreated into tiny flower buds, which now in midwinter were nestling under the tuft of spines in the heart of the plant, ready for the first convincing breath of spring.

If thrift originated outside the heart of man, then surely the cactus was its progenitor. Bankers of high or low degree can offer no better reasons for thrift and economy, nor can they supply a better example.

By D. M. ANDREWS

From "Colorado Seminar in Botany,"
Ninth Bulletin, February 26, 1947

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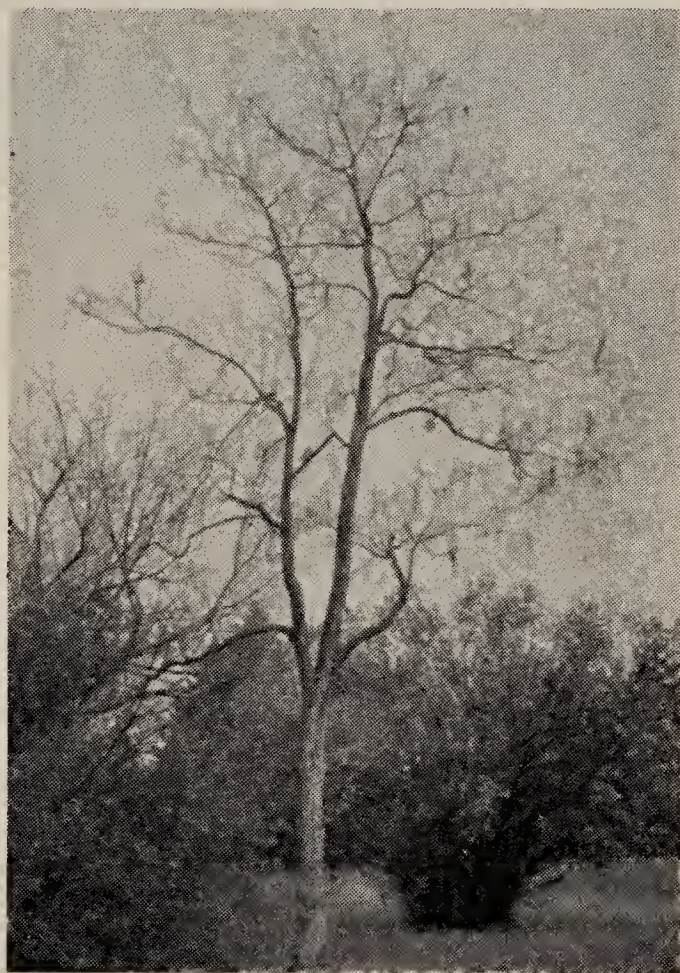
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CHINESE CATALPA

A tree often overlooked in our lists of smaller scale trees is the Chinese catalpa, *Catalpa ovata*. This tree is rated as having a height of 20 feet at maturity. It is a picturesque tree with its large leaves and pencil-like seed pods. The pink and white flowers are ornamental in June. The leaves are a little smaller than those of the Western Catalpa and are slightly lobed.



All available reports indicate that this tree is quite hardy in Colorado. There are several nice specimen trees growing near the northwest corner of Cheesman park in Denver. Little attention has been paid to these trees and it is not known whether any successful attempts have been made to propagate them from seed. More of these trees should be started and tried under various conditions in the state. We surely need a greater variety of good small trees for parking or garden planting.



BLUE STAR MEMORIAL HIGHWAY

October 19th was an important day to those interested in the development of the Blue Star Memorial Highway in Colorado. This was the day that the first roadside park and fireplace was dedicated at the intersections of several other highways and Highway 85-87 south of Colorado Springs. The accompanying picture shows the group present at the ceremonies. Mrs. Frank E. Neal is shown talking. Mrs. Neal has been chairman of this committee for the Colorado Federation of garden clubs for several years, and she and her husband have spent many days and used many gallons of gasoline promoting the development of the route east and west across the state on Highway 40. There is now legislation being prepared to officially designate the north and south road as a part of the nation-wide system.

At the national convention of the National Federation of Garden Clubs in Richmond, Virginia, April 25, 1950, Mrs. J. E. Dvorak read a long verse in which she referred to the

work of Mrs. Neal and others in various states. The verses started out:

It takes a heap o' workin'
On a road to make it right.
A heap o' sun an' shadder, an'
Ye sometimes have to fight,
Afore ye accomplish what
You start out to do,
And make Blue Star a tribute
To the ones who fought for you.

NEW ALL-AMERICA FLOWER SELECTIONS FOR 1951

Two new flowers, *Torch Tithonia* and *Glitters Marigold*, both easily grown annuals from seed, have received the All-America Flower selection awards and are ready for wide planting this spring.

Torch Tithonia, the Golden Flower of the Incas or Mexican Sunflower, is a bush form, luxuriantly foliated plant with long-stemmed, orange-scarlet flowers. It is early to bloom, withstands summer heat and seems free from all diseases. It reaches some four feet in height and two feet across, the large grey-green leaves make it an attractive foliage plant. The straight-stemmed, blazing, three to four inch, single, Dahlia-like flowers

are grand for cutting and are most useful in the making of a striking arrangement.

Sow the seed outdoors as soon as the soil is warm, or start indoors and transplant.

Glitters Marigold grows from thirty to fifty inches tall, is uniform and bushy erect in habit. The attractive foliage is dark green, a good rich background for the clear yellow blooms. The flowers are on straight stems, are three to four inches across, double, chrysanthemum-like and have fringed outer petals. *Glitters* is early to bloom, fine for cutting and a colorful, free-blooming garden attraction.

LOOK TO YOUR TREES

Extract from *Shade Tree Digest*, Courtesy of Swingle Tree Surgery Co.

When one's mind is troubled by thoughts of war, and an all-out effort is being made to produce the materials needed for National security, trees around the home are likely to be neglected. Such neglect is wrong. It is in such turbulent times that trees, if ever, prove their worth. The human mind can tolerate only so much worry and fatigue; if there be not some relaxation and change of thought and effort, a mental and physical breakdown is sure to result. Such an escape valve for pressures developed by prolonged anxieties and too strenuous labors, can be found in association with trees. There is something indestructible, a sense of permanency, about trees. In their structure and manner of life—in their flowers and fruit all pointed toward perpetuating the species, in their peaceful, non-competitive existence—they are symbolic of stability, strength, beauty and sublime faith in the future.

In associating with trees, caring for them, getting to know them intimately, no man can help but absorb

some of the qualities with which they are so abundantly blessed and which are so greatly needed when days are difficult. Take care of your trees and they will repay you a thousand-fold.

Questions Sent in to Horticulture House and Their Answers

WHAT should be the location of a hardy garden? Colorado Springs.

If you are wondering where to place the perennial garden for your choice plants, next spring, look for the best spot with the most sun and one easy to reach—in close relation to the house. If you are compelled to travel a half a mile to get to your favorite plants, something is wrong. For a wild garden or a large rock garden, it is all right.

I have a very small garden, what book should I read? Denver.

I should strongly suggest the careful reading of *The Little Garden* by Mrs. Francis King. You will be forever grateful to her for suggestions to beautify your small grounds. To peruse this delightful book will not be work, it will be fun.

What is meant by plant genetics? High school student, Denver.

Genetics is the study of plant breeding and plant inheritance. Gregor Mendel (1822-1884), an Augustinian monk, is credited with having developed the fundamental principles of genetics. For other fields of modern Botany, see page 16 of *College Botany*, Horticulture House.

H. F.

All those working with children's groups should hear Mrs. Watts' talk at the Horticultural Conference, 3 P.M., January 2.



Donors to the Library

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Mrs. John J. Sullivan

A GARDEN RECIPE HORSERADISH DRESSING Simple and Delicious

- 1 Cup heavy cream
- 1 Tbl. grated Horseradish (from garden)
- 2 Tabls. Lemon Juice
- Salt and Paprika

To Prepare: Beat cream until thick, add horseradish and lemon juice, whipping slowly continuously. Add seasoning. Especially good for shrimp salad. Serve cold.

HELEN FOWLER.

There Is a Bit of Humor in This One from Colorado Springs

In going over my garden the other day a friend remarked, "You must have a quack doing your garden work." What really is a quack and is there a horticultural quack?

Yes, too many of them. According to Roget's Thesaurus, a quack is an imposter, a deceiver, a charlatan—one who pretends something he is not. Look out for them ringing your doorbell in the spring. Dishonesty is the raw material of a quack. H. F.

New Books Received at the Library During the Month of December

- Propagation of Trees, Shrubs and Conifers—W. G. Sheat.
- Hedges for Farm and Garden—J. L. Beddall.
- Plants With Personality—Patrick M. Synge.
- Practical Lawncraft—R. B. Dawson.
- Land and Landscape—Brenda Colvin.
- Flowers to Know and Grow—A. W. Hatfield.
- Gardens and Gardening—Mercer and Hay.
- The Garden Frame—J. S. Dakers.
- The Folklore of Herbs—Katherine L. Oldmeadow.
- Shrubs and Trees—Jackman and Bush.
- One Hundred Beautiful Plants for the Small Garden—R. P. Faulkner.
- Mountains in Flower—Vareschi and Krause.
- The Story of Plants—John Asch.
- My Garden in Summer—E. A. Bowles.
- The Complete Book of Garden Magic, New Edition—Roy E. Biles.
- The Romance of the Rose—Josephine Craven Chandler.
- The Guide Series by T. H. Everett. Wildflowers, Woodland Flowers, Field Flowers.
- Guide to Familiar Wildflowers—Zimm and Martin.
- The A.B.C. Series—W. E. Shewell-Cooper. Of Flower Growing, Of Rock Gardens and Pools.
- College Botany—Fuller and Tipppo.

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SOME BOTANICAL TERMS EXPLAINED

Corolla—all the petals of a flower collectively.

Crown—where stems and roots join.

Cuttings—pieces of stem with leaves which, if placed in a suitable environment will take root and form new plants.

Disbud—to remove excess flower buds when quite small so that those remaining can develop more fully.

Division—cutting into two or more pieces so that each portion has both roots and stems or buds.

Fungicide—this is sometimes a confusing term; it is not the disease but a preparation for killing fungus diseases.

Grafting—taking a portion of one plant and causing it to unite with and grow upon another plant.

Humus—decayed organic matter such as leafmold, rotted manure, etc.

Hybrids—plants that have resulted from crossing two or more species.

Mulch—to cover the ground about plants with compost, leaf-mold, manure, peat-moss and the like; the material itself is also called a mulch.

Raceme—an elongated flower cluster in which each flower has an individual stem and the flowers open upwards.

Naturalizing—planting for informal effects so that care is reduced to a minimum. Bulbs planted in grass and left for years are said to be “naturalized.”

Radical—proceeding from the root.

Robustus—strong.

Rib—a projecting vein of a leaf.

Runner—a creeping stem, thrown out by a plant, such as a strawberry, tending to emit roots at its joint or extremity.

Speciosus—beautiful.

Spectabilis—notable.

Supurbus—magnificent.

Teres—round.

Terrestrial—pertaining to the earth.

Truncate—ending bluntly like the petals of the periwinkle (*Vinca*).

Uliginose—growing in marshy places, e.g. *Pyrethrum uliginosum*.

Venustus—lovely.

Vernal—pertaining to spring.

H. F.

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LOOKING BACKWARD AND FORWARD

WITH this issue we begin our eighth year of publishing the Green Thumb. We have watched it grow in size and, we hope, in usefulness. We have experimented with various arrangements and kinds of stories and pictures. We have always tried to make it fill the needs of the greatest number of people. Some have liked some kinds of articles and some have preferred others. Always we have tried to keep in mind that the purpose of the magazine is not to duplicate the service of any other magazine but to supply the best possible information on Horticulture in the Rocky Mountain Area, information which is not available anywhere else.

We have always had to work with a very limited budget and have never

been able to do the things that we would like to have done in the way of stories and pictures appropriate to the season, but have usually been compelled simply to use the best available material as it was supplied to us by our many good and loyal friends.

Each reader can help the magazine to be more useful in the coming years if they will take it as a personal responsibility to let us know of those who might have material for a story that others might like to hear. Possibly some neighbor has had especially good success with some particular plant, or has specialized in a certain cultural practice or has been unusually successful in adapting some plant or practice to our unusual climatic conditions. Let us know of these people or get them to write up the story and supply pictures.

Each one can also help by letting us know what things they like to see in the Green Thumb and also those features that they do not enjoy.

Let's all work together to make the Green Thumb in 1951 bigger and better and helpful to a larger group of people.

GEORGE W. KELLY, *Editor.*



*New Year's Greetings
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and to
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MILTON J. WEBBER, HORTICULTURIST

1865 - 1950

"A GOOD-SIZED oak or horse-chestnut? Did you try Broadview Nursery?" And nine times out of ten we were able to locate one there. Because Mr. Webber loved unusual trees and shrubs, and was willing to grow them to perfection, even if the profit on them might not be as much as on "the usual run of things." Of course, the risk we would always run was his verdict: "I am not sure I want to sell this one to you, I have grown it for twenty years and it is really part of the place."

No wonder, Broadview Nursery was designated on October 16, 1949 as a COLORADO BOTANICAL RESERVE; it contains a wealth of oak trees, maples, lindens, hawthorns, sycamores, even a tulip tree; it also boasts of many kinds of *Viburnum*, *Prunus*, *Euonymus*, *Eleagnus*, *Cotoneaster*, and many, many others. In fall it is a riot of scarlets, crimsons and gold. Buckeyes are particularly striking, Norway maples range from a pale yellow to a mottled pink. Mr. Webber knew every one of them as a personal friend.

And his Peony collection! There must be 150 varieties, all carefully selected for their merit in Colorado; discarded were the ones that did not come up to his rigid requirements. Mr. Webber was one of the too few members of the American Peony Society located in Colorado.

However, horticulture claimed only part of his well-rounded interests. Born in Illinois (Sept. 7, 1865), as the fourth child of a highly musical family, he and his brothers came to Colorado in 1891. Together they constituted a Webber brass band. Milton sang in church choirs of Trinity Methodist and St. John's cathedral,

incidentally winning a prize with them at the St. Louis World Fair, under Prof. Housely.

I wish I could do justice to his character, never compromising between right and wrong, of high intellect, of mechanical and scientific bent, loving his home and family, loving God and nature.

Tucked away within the nursery is a typical New England Colonial home, that might have been transplanted from Salem, but was entirely designed and built by the Webbers. Fortunately Mrs. Webber intends to carry on along the same lines her husband initiated.

M. WALTER PESMAN.

Principles of Landscaping

will be taught in Adult Learning Classes of the University of Colorado Extension at 1405 Glenarm Place, Room 402, this winter quarter. The course is one part of a general study of The Home, having to do with various steps, from buying, and landscaping a home to interior decorating.

Mr. Pesman, the landscaping instructor, promises to go into such fundamentals as grading, cost estimating, ordering nursery stock. Advice on fences, fireplaces, stonework, walks, and even summerhouses will be given.

Does the new type of modern building stump your landscape design? Join the class and rub elbows with others, studying modern outdoor living, analyzing new needs, getting up-to-date ideas in space planning.

To judge by the opinion of previous students these classes are instructive, practical, and—just good fun besides. Wednesdays from 6:30 to 8:30 p.m.

You probably know Petunias, Spireas and Cherry trees when they are in bloom, or if you are a little better gardener you will recognize them when just in leaf. If you want to be a really good gardener learn to know them in winter when they have neither bloom or leaves. When you learn them at this time they are your friends at all times. Notice the different pattern of the limbs of trees against a winter sky at night, notice the remnants of fruit on the shrubs that identify them; notice the color in twigs and barks, and try to remember what the perennials looked like when in bloom from the dried seed stalk that now sticks up through the snow.

Everyone, everywhere may have a few sprigs of green indoors to remind them of the gardens outdoors to come again next spring. A few seeds of most any kind started in a pot or flat will be intensely interesting to watch.

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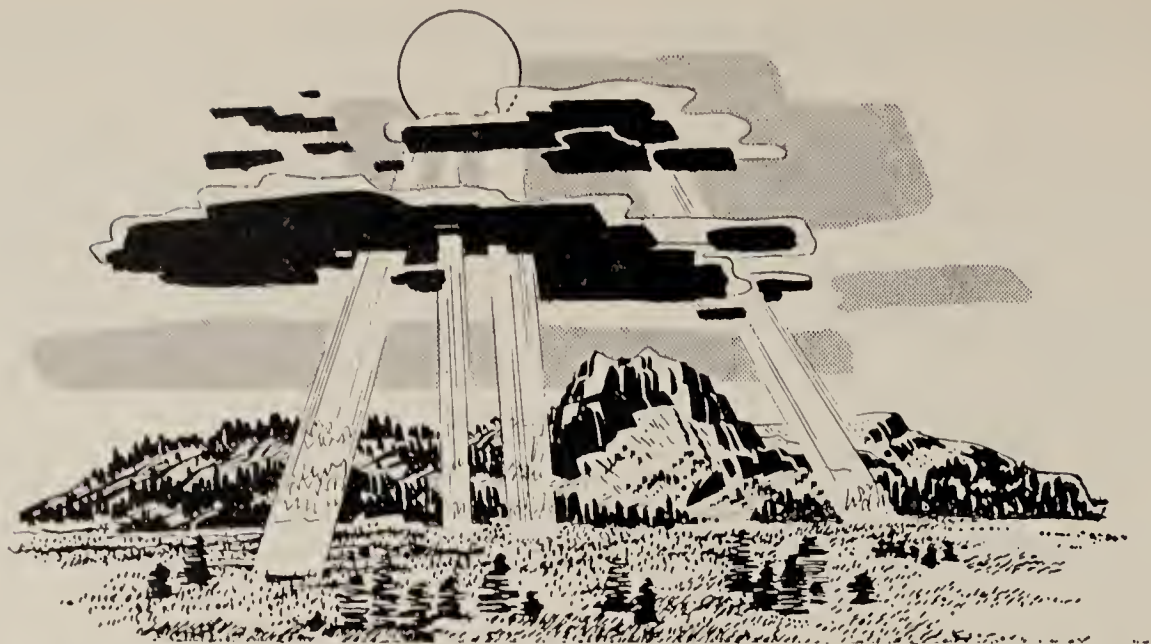
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Although long known to garden authorities, the amazing soil-conditioning properties of Sphagnum Peat Moss are only now being generally recognized. It seems too good to be true that a product so low in cost can accomplish so much! Peat Moss improves the moisture-holding capacity of sandy soils; makes stiff clay soils light and friable; retains fertilizers longer; aerates the soil; protects tender plants against cold; and performs scores of other garden functions.

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The World's Finest
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GARDEN REMINDERS FOR JANUARY

EACH year the plants go through their regular cycle of dormancy, new growth, bloom, ripening seed, fall color and again dormancy for the winter. Each year we must repeat much the same reminders and warnings. Old gardeners will know these things by instinct, but there will always be new gardeners (we hope) to whom these familiar reminders will be new and welcome. We will try to dress these familiar suggestions in new clothes, but they must, of necessity, be much the same from year to year.

In Colorado, we usually have our coldest weather in January so our chief outside chores may be to prevent snow breakage to trees and shrubs, and to prevent sunburn and snowburn to tender plants. Bracing trees and tying up tall, loose shrubs or evergreens may prevent some snow damage. A little shading or wrapping may keep tender-barked trees or evergreens from burning.

If there should come a few warm days when the ground thaws out it would be well to check the soil moisture. Sometimes narrow strips on the south of a building or on a steep south slope may need water when all other areas are sufficiently moist.

Most of our gardening in January will be done indoors. There will be the new catalogs to study telling all about the new plants that we may want to experiment with, and there will be books and magazines to study that we have not had time for during the active outdoor gardening season.

This should be the planning month. When the warm weather does come again we will have little time to figure out what we want to do—then is the time for action. Now we can surround ourselves with all the catalogs, books, magazines and bulletins on the subjects that we are interested in and dream our dreams of the whopper dahlias, perfect roses and bright petunias that we will grow. While these dreams are fresh is the time to put down notes of exactly what we want to do and when we want to do it. Get the necessary plants, seeds, and tools ordered now for delivery when they are wanted.

As you plan you will often think that you would like to know more about these interesting things that you are working with—where the roses originated, what the new insecticides are and how they are supposed to work, how a tree should be pruned, the different types of gardens, and just how a plant grows and reproduces itself. Get out your books, buy one that you need or come down to Horticulture House and read some of the many there for your benefit. The more we know about plants the more interested we become and the more interested we become the more we want to know. There is no end to the knowledge that a gardener may or should acquire.

During some of these stormy days get out all those clippings that you have hoarded around the place, but can never find when you want them. Classify them as to their principal subjects—Trees, Roses, House Plants, Fertilizers or Watering. Paste them in a scrapbook or file them in conveniently labelled folders. Often a couple of useful articles may be clipped from a magazine, filed, and the great bulk of uninteresting material discarded.

Season need not stop the real plant lover. Even snowshoeing up a little valley remembering that under the six feet or so of snow is the spot where you found the spring beauties or columbine last spring, is fun.

22



22

February, 1951

The Green Thumb

COLORADO'S GARDEN MAGAZINE



HEDGES AND HAWTHORNS

(See picture on front cover)

By JOAN PERRY

A FINE group of trees and shrubs stands out in the plains northwest of Denver. There an immense cottonwood towers head and shoulders above its companions, and it is this lovely tree that inspired the creation of the garden at its feet.

This garden was designed by the late Mrs. Britten — "Hedges" she called it—and planted these generously as a boundary to the property and as part of the inner garden design.

As you walk from the front yard through the wooden arched gateway a broad grass path, flanked by her-

baceous borders, leads to the foot of the great tree. And from the main axis another garden with an ornamental pool and simple fountain runs along the length of the house.

Beautifully designed, and grown to maturity as part of its own landscape, this garden is cared for today by Mr. Britten who is now retired, and spends his time there growing cut flowers for the florists. "Hawthorns" as Mr. Britten calls the place today is beautifully and simply planned: it is a restful quiet place that you may know at once to be a real gardener's garden.

WE BEGIN AND END WITH THE SOIL

I hear some gardeners joining in the chorus of lamentations heard every day—"What's the use planning for next year, everything will be destroyed, Civilization is doomed", and that sort of thing.

Gardeners, of all people, should have the most faith—they must have faith every year that the seeds will sprout, that the rains will come and that the insects can be controlled. They work with the fundamental things—the soil, living plants and the weather. These things are not governed by selfish and foolish men but by the laws of Nature which cannot be changed. When houses are burned and factories destroyed and governments changed the people must start right back where they did originally—with the soil—the soil to grow their food and the land on which to build their homes and schools.

Gardeners are not naturally interested in the destruction caused by war, they are interested in construction. Gardeners do not start wars and if the gardeners of the world had their say there would need be no war.

We must plan for the worst that can happen, that is sure, but we need not start quitting now. There have been wars before and the gardeners with faith have had to rebuild their countries. Let's not quit until we are licked.

We must preserve the seed of flowers and grass and trees, with faith that we can grow them again. If we could not have that faith in a better world what would be the use of fighting? Flowers, and lawns and trees have always been the symbol of permanence and civilization and construction—the opposite of war and destruction. We must maintain these things to come back to when we have finished our foolish fighting.

The Green Thumb

Vol. 8

FEBRUARY, 1951

No. 2

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MR. AND MRS. E. O. COOK, Custodians			

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

1355 Bannock Street

• Denver 4, Colorado •

• Tabor 3410

COMMITTEES

FINANCE: Milton J. Keegan, Cm., Scott Wilmore, Fred R. Johnson, Mrs. Robert M. Perry, Mrs. A. L. Barbour.

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PUBLICITY: Mrs. Ralph Rickenbaugh, Cm., Mrs. Everett Parker, Mrs. George Garrey, Fred Johnson.

PUBLICATIONS: George W. Kelly, Cm., Mrs. G. R. Marriage, M. Walter Pesman, Mrs. Claire Norton.

LIBRARY: Mrs. Helen Fowler, Cm., Miss Alice Wood, Mrs. Kenneth C. Sawyer, Mrs. Montgomery Dorsey.

HERBARIUM: Mrs. E. R. Kalmbach, Cm., Mrs. Edward Bahm, Mrs. J. R. Ballinger, Mrs. G. H. Forcade, Mrs. G. H. Grinstead, Mrs. R. H. Hughes, Mrs. Glenn F. Johnson, Mrs. J. W. Newman, Miss Alice Quinn.

MIDWESTERN SHADE TREE CONFERENCE

Chicago, February 14-16

All those interested in trees commercially or professionally should attend the Midwestern Shade Tree Conference held in Chicago, February 14, 15 and 16.

At these annual conferences all the latest experiences on the care and planting of trees is presented by the

leading experts from the colleges, city forester offices and commercial arboriculturists.

New insecticides, new diseases, new methods of fertilization, new weed controls are all appearing so rapidly that everyone dealing with plants in any commercial or professional way needs to take every opportunity to keep up with the latest developments.

Call Horticulture House for more details of program and registration.



Colorado Forestry and Horticulture Association

Organized in 1884

“To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit.”

OFFICERS

- President.....Mrs. John Evans
Executive Vice President.....Mrs. A. L. Barbour
Vice Presidents—Fred R. Johnson, Mrs. Robert M. Perry, Milton J. Keegan, S. R. DeBoer, Mrs. J. Churchill Owen, Mrs. George H. Garrey.
Secretary-TreasurerMildred Cook

FEBRUARY SCHEDULE

Feb. 8, Thurs. Horticulture House, 8 P.M.

Garden Time Is Just Around the Corner

And now is the time when all Seed Catalog addicts are dreaming up the wonderful gardens they'll have this Summer. Horticulture House is addicted to dreaming over seed catalogs, too, and on Thursday evening, Feb. 8, is planning a grand get-together for every one of like mind. You bring your pet catalogs and we'll have ours and we will share an evening of garden gossip. To get us all started off right, the meeting will begin at eight o'clock, with brief discussions by folks who know the pros and cons of the new plant introductions including our new vegetables as well as the delightful new flowering plants, shrubs, bulbs, etc. This will be one of those "More the Merrier" occasions you won't want to miss. Horticulture House will be open at 7:30 as usual.

Feb. 11, Sun. Snowshoe Trip to Loveland Pass ski area and old Zipfelberger trail. Leave Horticulture House at 8:30 A.M. Register by Friday.

Feb. 22, Thursday eve. Horticulture House, 8 P.M.

Movies Movies Movies

Take notice all arm-chair travelers! On Thursday, Feb. 22, you can take

a trip such as George Washington never dreamed of. Simply by coming to Horticulture House, and in one evening, you can cover miles of scenery it would have taken him years to see. Your conductor will be Mr. Wendelin of the Rio Grande Railroad and he will show you SCENERY UNLIMITED. An added attraction will be a short movie of the Arkansas River Boat Races. Horticulture House will be open at 7:30 and the program will start promptly at 8 o'clock. Don't miss the train.

Feb. 25, Sun. Snowshoe Nature Trip to the beautiful Butler Gulch Area. Leave Horticulture House at 8:30 A.M. Register early.

DIRECTORS

Term Expiring in 1952

- Mrs. A. L. Barbour.....Forester
Mrs. Helen Fowler.....Shadow Valley Gardens
George W. Kelly.....Horticulturist, Editor
Mrs. Frank McLister.....Home Gardener
Mrs. J. Churchill Owen.....Home Gardener
Mrs. Robert M. Perry.....Home Gardener
Earl Sinnamon.....Arboriculturist
Mrs. Everett Parker.....Home Gardener

Term Expiring in 1953

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L. C. Shoemaker.....Retired Forester
John Swingle.....Arboriculturist
Le Moine Bechtold.....Merchant, Plant Breeder

PRESIDENT'S REPORT FOR 1950

Given at the 67th Annual Meeting of the Association, held in Denver Jan. 2, 1951.

THIS evening I take very great pleasure in greeting the members and friends of the Colorado Forestry and Horticulture Association, at this, its 67th annual meeting. On behalf of the officers and directors I extend you a warm welcome.

The year 1950 has been an important one in the life of the association. Increasing calls upon its services by the general public and growing interest in its many activities have been significant.

For many years the Association has endeavored to encourage communities in Colorado to create in their parks well labelled botanic gardens and arboreta, believing that such gardens would add greater beauty and distinction to a given park, as well as stimulate public interest and enlarge public knowledge of trees, plants and flowers. The association is encouraged to believe that the City of Denver will soon create an agency to lay out a botanic garden and arboretum in that portion of City park lying to the north, south and west of the Denver Museum of Natural History, and adjoining the area now being developed as a fine zoological garden. The present forward-looking city administration envisions in such a natural history area, a potential asset of the city—unique in its assemblage—in a truly magnificent setting, which annually attract tens of thousands of citizens and visitors alike—and add another jewel to Denver's crown as one of the most desirable places to live found anywhere in the world. The association hopes other communities in Colorado will adopt similar plans.

The Association's publication, the Green Thumb, records in each month-

ly issue the interesting and instructive programs planned for the succeeding month and carried on at Horticulture House, 1355 Bannock St. During 1950 these programs included a series of classes for homeowners, conducted by George W. Kelly, Horticulturist of the Association, and presented information on how best to lay out and plant the available ground around one's home with trees, shrubs, lawns, flowers and vegetables; how to be sure of good soil conditions; the importance of adequate but not excessive irrigation and to otherwise provide proper maintenance.

On Wednesday evenings a series of classes for professionals were arranged by Dr. Moras Shubert of the University of Denver. Many of these varied programs presented by qualified experts in their respective fields have been of significant value.

Friday evening programs were arranged by Mrs. Moras Shubert. These were most interesting and very well attended. During the year many other meetings were held at Horticulture House, such as those of the Rose Society, the Iris Society, the Denver Cactus and Succulent Society, various garden clubs, the Nature Institute and botany study classes.

Groups were conducted on 23 field trips to sites of special botanic interest and scenic beauty. Mr. Kelly spoke before 80 garden clubs and other organizations in Denver and throughout the state.

The Association took part in the tree planting programs of the Colorado Mountain Club and the U. S. Forest Service.

The annual regional meeting of the Garden Club of America was held in Denver in October. Registra-

tion of delegates took place at Horticulture House. All delegates were deeply interested in the activities of the Association, and were extravagant in their praise of the Association's distinguished library covering the field of Horticulture and named the Helen Fowler Library.

Mrs. Fowler, chairman of the library committee, continues her great work creating for the Association the finest library of its kind in the Rocky Mountain Area. Through her knowledge and judgment of values, her generous personal donations, as well as those of her friends, over 2300 authoritative volumes on horticulture and related subjects have been assembled, at least 300 additional volumes were added during the past year.

The Green Thumb, the official bulletin of the Association, has grown in value and in influence under the direction of its able editor, George W. Kelly, Horticulturist of the Association. The bulletin has come a long way since the little folder of eight pages first appeared in 1944. Mr. Kelly is rendering an outstanding service to horticulture in the Rocky Mountain west by so ably editing this now nationally recognized publication. No other can speak with greater authority on horticulture in this region where climatic and other conditions are so different from other sections of the United States.

✓ We are proud to announce at this time the forthcoming publication of

Mr. Kelly's book entitled, "Rocky Mountain Horticulture is Different, George Kelly's Garden Book." This book should be available early this year and will be on sale at Horticulture House, at KOA and at all downtown book stores. A copy should be in everyone's library.

Mrs. Kalmbach has recruited an efficient and hard working group of people who have helped her with the labelling and mounting of the many specimens in the Herbarium at Horticulture House. This should be a distinct addition to the horticulture and botany of the region.

Mrs. Alexander Barbour, chairman of the ways and means committee of the Association will report to you on various matters affecting the Association. Since Mrs. Barbour's resignation from the office of the City Forester she has contributed her entire time to the Association, and is doing yeoman service to assure the continuation and progress of the work and service of the Association to the people of our region. Everyone interested in the Association and its worthy objectives is already deeply in her debt. Before calling on Mrs. Barbour I want to thank most sincerely our many friends who have volunteered services upon committees, our officers and staff for their effective work and fine cooperation during the past year.

MRS. JOHN EVANS.

TREASURER AND SECRETARY'S REPORT, 1950

YOU will note from the accompanying figures that 1950 has had its financial ups and downs. So much so that we have all come to feel that some way must be found to make sure of a steady income that will be adequate to our needs. So much of the Associ-

ation's work, as you will see presently, is of the intangible variety that though of high value to Denver, the state and neighboring regions, does not and never can bring in returns in cash.

The minimum membership, altho

THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

Report of Operations

January 1, 1950 through December 29, 1950

CASH BALANCES, January 1, 1950

Cash on hand and in bank.....	\$ 2,182.28	
Postage Permit	78.39	
Petty Cash	6.41	\$ 2,267.08

Less: Accounts Payable..... 801.21

\$ 1,465.87

Less: Adjusting entries January, 1950..... 48.37

NET BALANCE, January 30, 1950.....\$ 1,417.50

INCOME

Memberships and dues.....	\$ 8,891.10	
Advertising	2,763.72	
Green Thumb Cash Sales.....	272.27	
Donations	3,831.72	
1950 Conference	(22.75)	Loss
BENEFITS: J. N. Ott Pictures.....	490.31	
Spring Festival	902.28	
Plant Auction, Oct., 1950.....	595.55	
1951 Conference	629.50	
Miscellaneous Income	304.95	\$18,658.65

TOTAL OPERATING FUNDS.....\$20,076.15

EXPENSES

Green Thumb, Printing	\$ 7,492.28	
General	818.85	\$ 8,311.13
Salaries	6,811.61	
Office Expense	355.94	
Horticulture House Expense.....	183.22	
Office Postage	258.59	
Gas and Electricity.....	292.25	
Telephone & Telegraph.....	250.84	
1951 Conference	7.88	
Membership Drive	73.02	
Petty Cash Expenditures.....	75.89	
Miscellaneous Expense	379.46	16,999.83

NET BALANCE or WORTH, Dec. 29, 1950.....\$ 3,076.32

raised to \$3.00 last July, barely covers the cost of producing, printing and distributing the Green Thumb. It is on the larger memberships, \$5, \$10, \$25, and \$100 and on gifts of even much larger amount that we rely and must continue to rely for the margin to finance our multiple other activities. How can such an income be secured without continuing to lay too heavy a burden on our most faithful friends?

I think I have a partial answer.

One can often be inspired by learning how other organizations solve their financial problems. Last autumn I attended a conference in New Hampshire of representatives from a dozen private Forestry Associations. The man from Ohio was particularly helpful. Said he—"Your work, like ours, deals largely with public education and the conservation of natural resources. Go to organizations and industries whose prosperity depends particularly on such programs and

propaganda. Tell them about your work and ask them to support it in so far as they see fit." I have started to do this with some very encouraging response. The Public Service Co. is going to help us generously in 1951 in the expansion of education programs on proper *tree* planting and maintenance in the city. The Denver Clearing House Association has contributed on the basis that our work promotes the economic welfare of the state in general. Other businesses are interested for other reasons and I hope there will be more and more of them.

Meanwhile we are having a membership drive—not with a time limit—but continuous. Cooperative workers, too many for me to be able to give all their names here, are aiding the committee by seeking and getting from 5-10 new members each among their friends. Members who for some reason did not renew in 1950 have been contacted by a diligent group of telephoners and a good proportion have returned to the fold. The committee has also embarked on an attempt to gain members and at the same time to spread helpful education in the housing developments where brave young folks are starting from scratch on the prairie just as their forefathers did as far as soil, trees and gardens are concerned. This part of the membership campaign should go ahead with big strides in the spring. We have also set up a Consulting Membership for a limited number of subscribers. This provides from 4-6 visits to the member's premises each year to give detailed advice on individual problems.

Our total membership of all categories now stands at 2,475, which is 239 more than on Oct. 1, 1950.

We have held two benefits this past year—the Auction of "Antiques and Horribles", so-called, in the spring in our own parking lot at Horticulture

House and the Plant Auction in the Civic Center in the fall. They were both so successful and so much fun (as well as work) for all concerned that we plan to repeat them. A motion picture, *This Changing World*, made by John Nash Ott, the exponent of time-lapse photography, was shown at the Phipps Auditorium and sponsored by the Association in February.

we are working on such projects as: The creation of an arboretum, in conjunction with the city administration, to be located in City Park, adjoining the Natural History Museum. This project has been approved by the Mayor and will soon be in active progress. Roadside Improvement and Protection throughout the state. The development of State Parks and Recreation Areas. Seasonal scenic trips to well and little known natural beauty spots to acquaint the public with their own state. The preservation of Wilderness areas, i.e. the Dinosaur National Monument in Northwestern Colorado—this has involved several trips to the canyons and one to Washington.

We seem to become increasingly a clearing house for the initiation and sponsorship of legislation relating to conservation in many phases. Bills that will reach the State Legislature in the coming session are State Parks and Roadside Improvement, State Control of Dusting and Spraying, Proper Regulations of the Cutting of Christmas Trees.

And so it goes! I hope that you agree with me in my conviction that the Colorado Forestry and Horticulture Association, being a private enterprise, with no governmental strings tied to it, is the rightful center and backer for this type of protection for our state's assets and therefor it should have the wherewithal to continue this service.

CHARLOTTE A. BARBOUR.

MY WHITE BIRCH TREE

By B. O. LONGYEAR

A lovesome thing is the white birch tree
That stands beside my home
And I wonder sometimes that a thing so fair
Could grow from the earth's dark loam.

Not many years ago t'was held
So slender in my hands
And planted with care where today the tree
Tall and majestic stands.

The birds are ever frequenting
Its boughs through all the day
And children 'neath its canopy
Seem in fairyland at play.

I've watched its lovely form respond
To Nature's every mood;
Hoar frost-bedecked, dew-gemmed at morn,
By summer breezes wooed.

But when the night effulgence of the moon
Floods all the earth and air,
The tree's material form then seems
Etherialized, a prayer.

'Tis then in purest ecstasy
My soul seems freed to blend
With time and space, the Infinite
And things that have no end.

And when for me life's day is done,
The sky with stars alone is filled,
When the windows of the soul are closed
And all within the house is stilled;

I would there were no monument
Of marble, bronze or stone
To mark my earthly resting place
But some fair tree alone.

A tree whose brooding boughs are spread
Above the sheltering sod,
That looks into the arching sky
All day adoringly to God.



White Birch Tree in City Park, Denver. Photo by Chas. J. Ott.

PLANTING

Here Are Important Rules for Every Gardener

By GEORGE W. KELLY

THE growing of good ornamental plants is probably dependent at least half on their being properly planted, and yet this operation is the one that is most often done hurriedly or improperly.

In this Rocky Mountain Area we have several conditions which make proper planting more difficult. Soils in general are alkaline, the ground is often dry when the planting is done and there is small chance of newly set things getting natural precipitation enough to keep them growing. The most difficult situation of all is the especially hot sun and dry air, which many of the plants from other climates can not tolerate.

Plan First

The most common mistake made in planting is to buy a few things that look good at the nursery and take them home and then try to figure where to plant them. Under these circumstances they are usually planted in the wrong place for their best effect and are most often put in the ground in the quickest way possible.

The right way is to have planned well in advance for the things needed and then buy only plants that will fit these plans and create the effects desired! Ultimate height should be the first consideration, then such things as bloom, fall color, fruit, and winter effect. Plants must be selected which will tolerate the conditions found in the place where they are to be set; such as shade, bright sun, wind, heavy soil or competing tree roots.

Planning all the details of a planting is good winter garden work, then when spring comes and the frost is

out of the ground all attention can be given to the actual work in the soil. Put these plans on paper so that you will remember them.

Prepare the Soil

Too often ornamental plants are planted in soil around a new home without doing anything to improve it. When every house had a basement this usually meant planting in this lifeless soil from the bottom of the basement. The garden was doomed from the beginning.

Take time to prospect all over new grounds and if very poor spots of soil or deposits of plaster and rubbish are found, remove them and bring in good soil to replace it. This may cost money and delay the planting but it is the most important step in making a good garden. Even with reasonably good soil, there should be some work put on working it up rather deeply and adding manure, leafmold or peat.

With your plan in mind it is good practice to dig the holes for the things that you intend to get that day or the next. Dig them plenty large, especially at the bottom, where the roots will want to spread; and remember that the harder the holes are to dig the larger they should be. You can loosen up the hard soil easier than the new roots can. If poor soil or subsoil is encountered in digging these holes throw it out and fill back with good topsoil when the plants are put in.

New plants like to be set in good soil—soil with humus in it, but they can not tolerate great quantities of rich fertilizer, either organic or chemical. Up to a third in bulk of peat can profitably be mixed with most

any soil, as it has little chemical value, and smaller quantities of leafmold or well-rotted manure can be used, depending on the age and chemical strength of the material. It would be good practice to prepare the soil for planting many months in advance, if possible.

Get Good Stock

Don't let the pretty colored pictures and glowing stories of nurseries from far distant places fool you into getting things which are not adapted to our climate. Even species of plants which are adapted here may be poorly grown or badly packed so that they arrive more dead than alive. Don't fall for "bargain" plants. The only way to economize in buying plants is to get small sizes. These small plants will usually move easier, start growing sooner and will cost considerably less. If you must have large plants, see that they are moved with a good proportion of roots or balled. This is expensive work at the best.

Your local nurseryman is more likely to have the plants that are adapted to your conditions and he will be able to get them to you in fresh, live condition. Many nursery plants are dug in the fall and stored in cellars until planting time in spring. This process can be done so that the plants are in good condition when delivered to you, but there is plenty of chance for careless handling and you should see that the plants you get are not dried up or damaged from handling. The larger sized trees and shrubs are much better when moved directly and promptly from the nursery to your home.

If you have stock given you, that you must dig yourself, you should dig carefully so that you will get all the roots possible and protect these roots from sun and wind until they can be put back into the soil again.

When plants are delivered before the ground is ready to plant them,

they must be cared for carefully so that they will not become dried out. If they are small plants or are carefully packed in some moist material they may lay several days without harming them. Open the tops so that air can circulate around the tops, but leave the roots covered, and be sure that the material around the roots is moist. Set the package in the shade. If plants must lay for several days, or if they are large it is best to "heel" them in in the soil. To avoid digging a large hole they may be laid on their sides and just enough soil thrown over them to keep the roots from drying out. Water as necessary to keep moist. If stems of plants appear shriveled, cover them completely with moist soil for a few days. Often roses will be benefited by this treatment.

The Actual Planting

After all these preparations, then comes the actual planting—the place where many start. Bring out your plants and look over their roots. Make fresh cuts with a sharp knife or shears where there are mangled ends or dead tips. A good clean cut will encourage new roots to start. Keep all roots covered while preparing to plant. With the holes dug in the proper places and sufficiently large, and suitable soil available to backfill, you are ready to plant your stock.

This is best done by two people so that one can hold the plant, spread out its roots and see that the soil fills around them. Throw in the first few shovels of soil very carefully—just sift it in, so that the roots are not thrown all out of shape or matted together. Put the best soil in first. When the hole is almost full of loose soil work the hose, with the nozzle off, down to the bottom of the hole and turn on the water. Let the soil settle from the bottom up and there will be no air pockets. When the

soil has settled and the water begins to show on the surface turn it off, check the plant for depth and position and fill in the balance of the soil. If hose water is not available the same effect can be had by watering from a pail if a spade is used to work a passageway down to the bottom of the hole. Unless there is no water available and the soil is already moist do not tramp or pack the soil. Watering and tramping both are likely to form "bridges" of soil with air pockets underneath.

Plant all things at about the depth that they grew in the nursery. This can usually be told by the difference in color and texture at the natural ground level. Tall trees should be braced for some time until the ground settles and the new roots take hold. Be careful to pad the wires used for bracing, where they are attached to the tree, and move them frequently as the tree grows.

Hedges are usually planted by digging a trench the distance of the hedge and setting the plants at intervals in the trench. By carefully lining up the trench and setting all the plants a uniform distance from one edge a straight line is assured.

Roses are planted much as other shrubs, but should be cut back to about 8 inches and hilled up with soil almost to the top of the stems until the new growth starts. Pick a spot with about two-thirds sun for best results.

Transplanting evergreens is a specialized job. Their roots do not tolerate being dried out for even a few minutes, so the general practice is to move them B&B (balled and burlapped). This balling is a particular job, the important thing being to keep the ball of soil around the roots solid and undisturbed until it is back in its final hole.

Balled stock should be handled carefully, and always by the ball and

not the top. Prepare the holes to receive balled evergreens so that there is plenty of room to set the ball and work it around in position. Usually a hole about a foot greater in diameter than the ball will do. The soil in the bottom of the hole should be loosened up some but the depth of the hole should be carefully measured so that when the ball is lowered in it will set at the same depth that the tree grew originally. Then carefully plumb the tree and pack some soil under the edges of the ball so that it will stand solid. Backfill and water then much as for deciduous stock.

Most perennials are handled with some soil remaining on their roots. These clumps can be planted much as would the larger things, watering in carefully. Small bare-root perennials and annuals should be set with a shovel or trowel, spreading the roots out as naturally as possible and carefully watering in. Sometimes a little shade from a shingle or newspaper will allow these bare-root plants to become established quicker.

Dahlia roots must be carefully handled to avoid breaking the "neck" where all the new sprouts originate. Gladiolus bulbs may be planted 6 inches deep when put in early or a little more shallow when set late in the season. If set deep they can be planted before danger of frost is over. Cannas are easy to plant but are tender and should not be put out until frost danger is over—probably June first. There are many species of lilies requiring varying treatment, so the only way to get them in properly is to study the requirements for each kind.

Fruit trees and berries may be handled much as would ornamental trees or shrubs.

Care After Planting

These new plants must be considered much like babies of any kind—

they need a little extra attention until they become established with new roots and tops. It is a good idea to check the moisture content of the soil around them about every two weeks for the first year. Unless you are sure that the soil is moist down to their farthest roots, give them another soaking. The only way that you can tell how long it takes to soak down far enough in your soil is to experiment and check the actual conditions a few times. Do not assume that if a little water is good for them a lot is better. Many new plants are killed by this "kindness" of continually keeping the soil around their new roots soggy. Water thoroughly but infrequently.

For the first year it will often be found convenient to leave low dikes and bowls around the new plants to facilitate thorough watering.

Some protection from the wind and sun will be appreciated by many of the better plants. Mountainash, Linden, Hard Maple, Wild Cherry, Walnut and Buckeye trees will appreciate being wrapped or their trunks shaded for a few months or even years. White Pine, White Fir or Arborvitae would benefit by having a lath or burlap shade set on the southwest.

Most all newly transplanted woody plants will make a better growth the first year if they are carefully thinned or cut back. This allows the roots to become established before they have a large top to support. This trimming can at the same time be done in such a way as to encourage the plant to shape itself in the form desired. A hedge should be cut away down to encourage it to branch freely while a tree may be thinned or the individual limbs cut back to encourage it to grow tall. Evergreens, other balled or potted plants and very small plants usually need no trimming.

Special Treatment

Some slow-growing trees require special treatment to assure their growth. Birch are safely moved for about a week in spring just when the new buds break into green. At this time they may be safely moved bare root, but at any other time they require a large ball of soil. When Hackberry, Hawthorn, Honeylocust, Oaks and other slow growing trees are transplanted, they may set dormant half the summer before breaking out in leaf. Success can be assured with these difficult trees by digging with plenty of roots, keeping the roots from drying out, using much peatmoss around the roots in planting, keeping the soil moist, and frequently sprinkling over the top.

The main planting season in this area is in the spring between the time the frost is gone from the soil and the time that the leaves start to grow. This season may start anywhere between February first and April first and usually ends the middle of May. Except for those particular plants such as those just mentioned all things may be moved as soon as the frost is out of the soil.

There is usually a fall planting season from about the middle of October to the middle of December, which depends on season and weather. Many of the evergreens, slow-growing trees and shrubs with difficult roots are not as safely moved in fall as spring. They may set through the winter with our hot sun shining on them and sucking out their moisture and be in poor condition in spring when the weather becomes favorable for new growth. Each nurseryman has special preferences as to planting in the fall so if he is willing to take the risk, let him be the judge. There is always too much to do in spring and anything that can be safely done in the fall is just that much out of the way.



West Maroon Canyon, Photo by Jay Higgins of U. S. Forest Service.

OUTDOOR ACTIVITIES

Report of 1950 and Suggestions for 1951

BY MRS. ANNA TIMM, CHAIRMAN

THE 1951 schedule started off from the tip top of Devil's Head, at the Fire Lookout Station. Eighteen gay persons climbed the stairs in 1950 and returned in 1951. Last year four people initiated this trip, with a cold hurricane wind and clear sky which showed every star and every pinwheel of the fireworks on Pikes Peak. This year there was the same wind, but snow and fog to blot out everything at any distance. The party spent parts of the night both before and after the climb at Winston Kelly's Ranch down the road.

Among the many excellent privileges extended to its members by the Colorado Forestry and Horticultural

Ass'n., this fairly new one, the Hiking Group, should rank very well. The committee have been very persistent in carrying out their schedule of trips month after month, through rain or sunshine, snow or wind. This group might be found wandering in high, far-away places on a stroll to see the new flowers coming in spring or the hillsides getting ready for retirement in fall. There is no measuring rod to measure the priceless peace and contentment found out there where Nature is ever at work. These hardy folk hope that they may show more people in 1951 some of the joys to be had in the unspoiled hills.

Last year there were 40 trips sched-

uled with a total attendance of 480, or an average of 12 per trip. Average miles hiked per trip were 7 or 3360 miles for the season. Most of the trips were one day, but there were several two and three day and a couple of week long trips.

Highlights of the 1950 schedule included a 4 days trip into the wild and beautiful Dinosaur Monument country, a Labor Day gallop on the Galloping Goose out of Ridgeway, joint trip with Gates Hikers to Montezuma and Webster Pass, Boreas Pass in full fall color, and a one day trip over the tops of Mounts Flora, Eva, Bancroft and James.

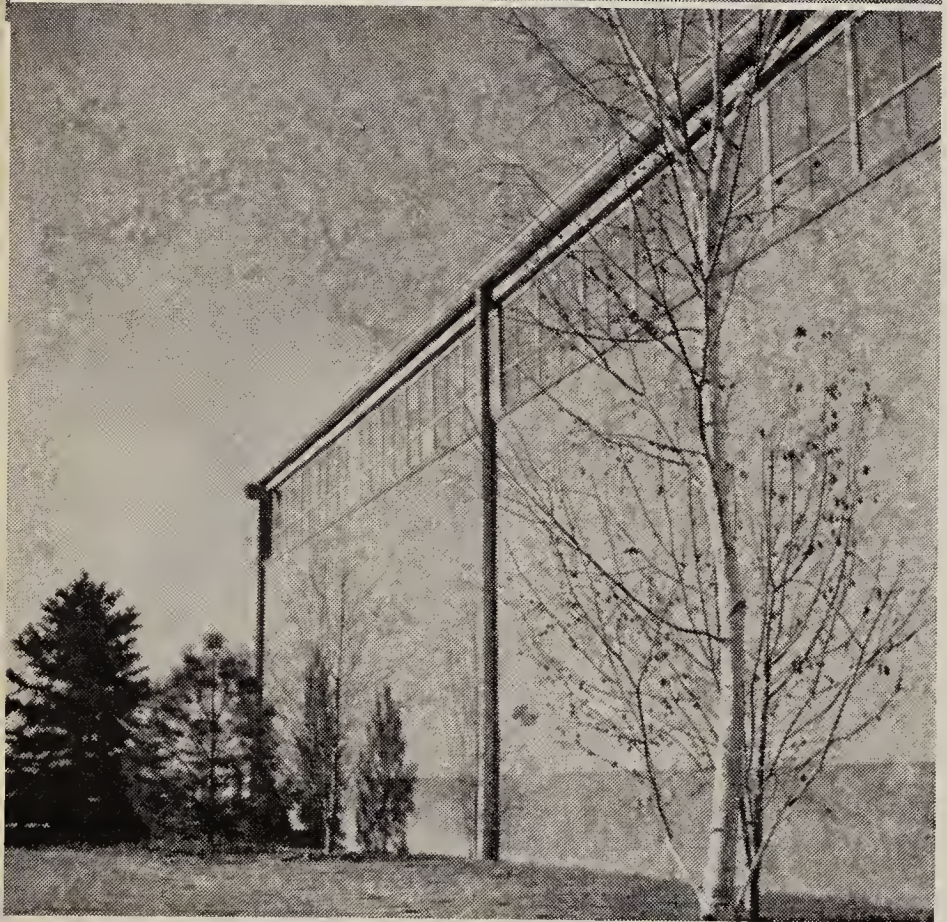
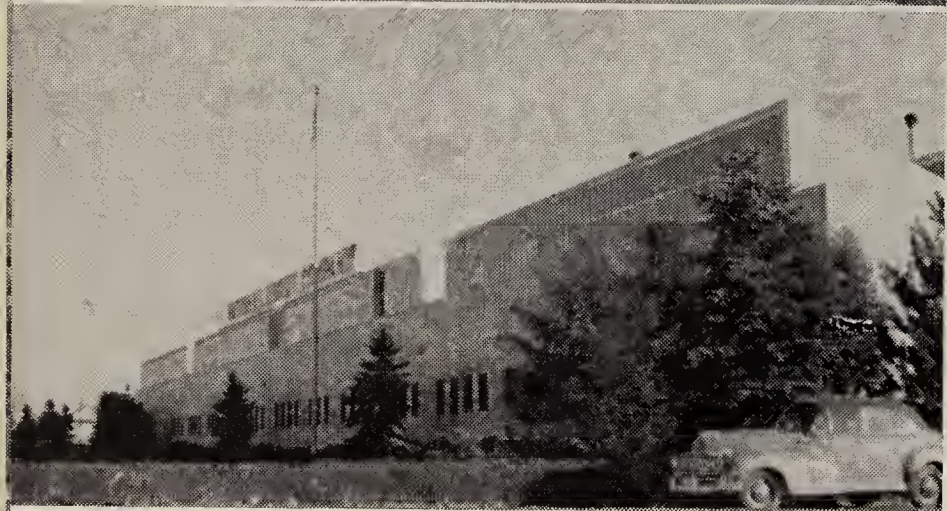
Plans for 1951 include trips into the fabulous formations of the former Wheeler National Monument, over Labor day; a repeat trip into the

Dinosaur Monument country by bus and jeep, the last of May and first of June; and a week long backpack in the beautiful unspoiled Snowmass—Maroon country in mid July. These trips will be by foot but provision will be made to have supplies carried in by horse or jeep.

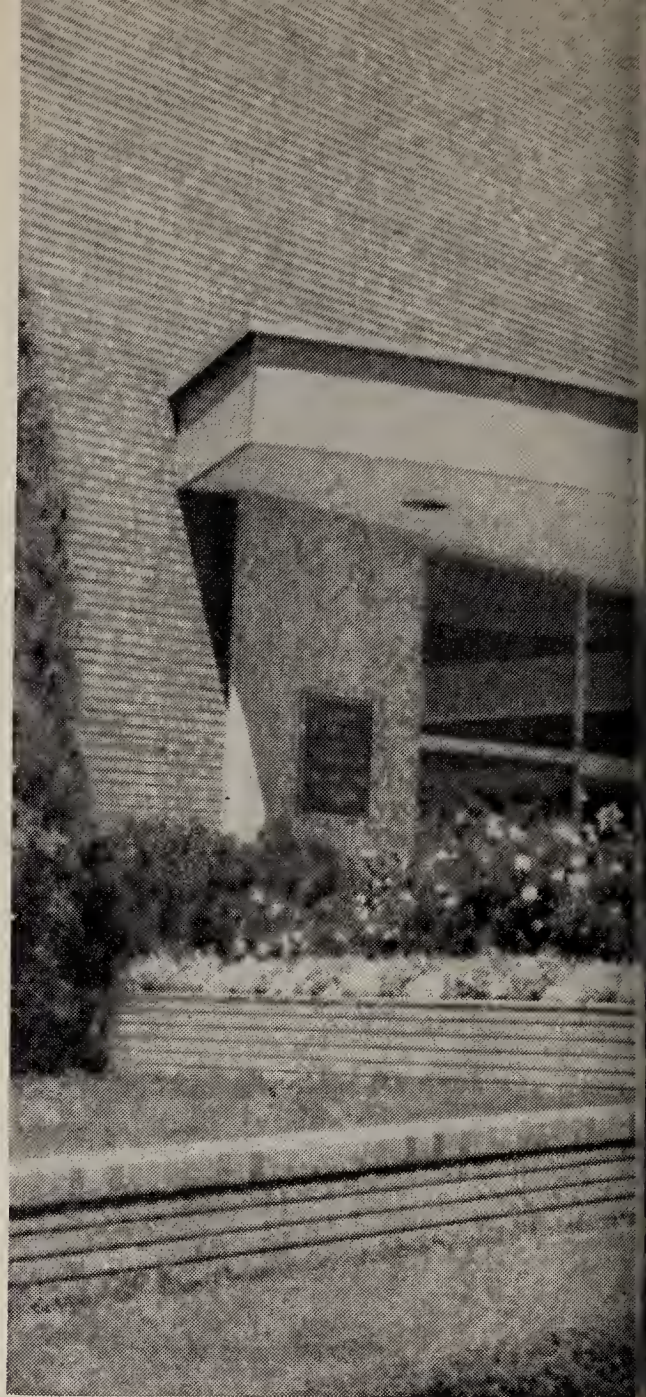
These are just the beginning of the many fine trips being planned. The committee would appreciate your suggestions for any trip, large or small, that you would like to take, into some area of interest. They need your cars to furnish transportation, and they would appreciate your early registrations for all trips. We appreciate your help in the past year and have enjoyed the wonderful fellowships established.



*Some of the fantastic weathering of stone in Wheeler Monument Area.
See picture of Dinosaur Monument area on rear cover.*



AS a nation we are beginning to learn that there need no longer be a definite line between the economic, utilitarian things and the beautiful and artistic. More and more firms are learning that it does not cost, but it pays to make their commercial



COMMERCIAL ESTABLISHMENTS BE ATTRACTIVE

places of business attractive. It pays to make the effect on prospective customers and it pays in the feeling of pride that it encourages in employees. The esthetic and the practical do mix to the advantage of both.

These random pictures of a few firms around Denver demonstrate how a few trees, shrubs, flowers and so on on a lawn well placed around a commercial place takes off the drabness and makes it a thing of beauty as well as utility.

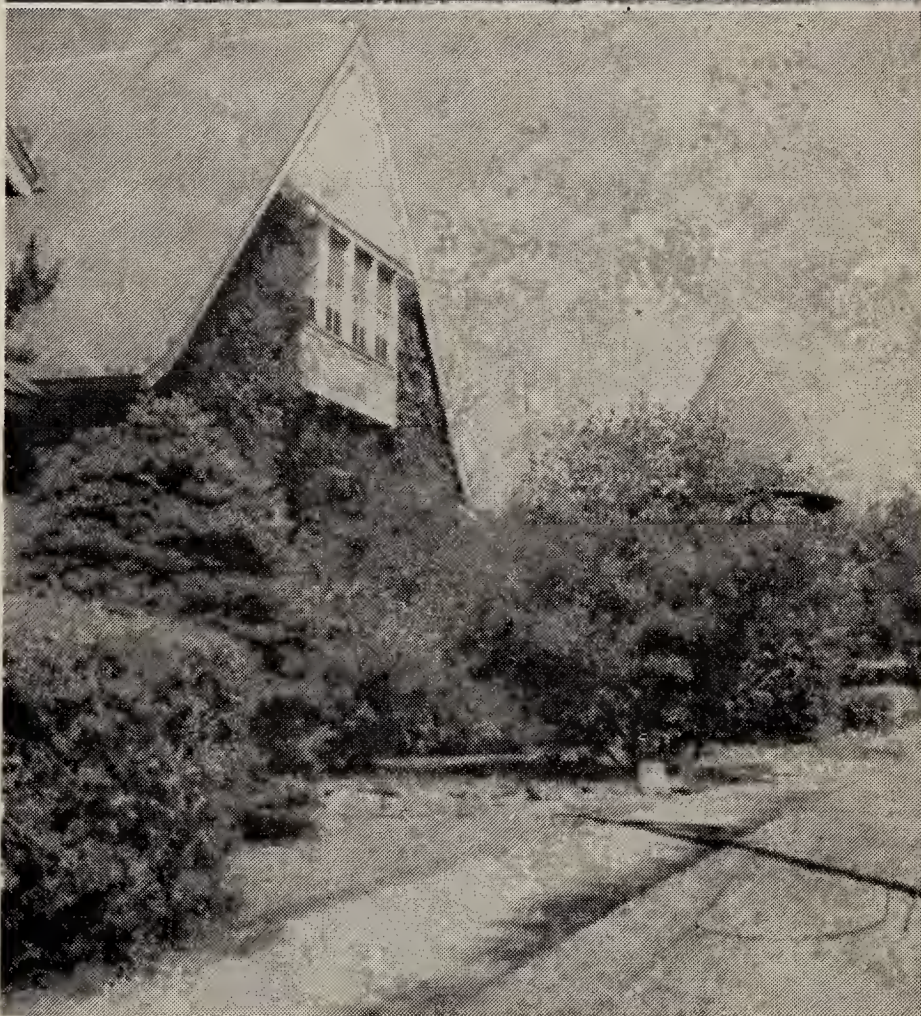
The picture in the upper left hand corner shows the Home of Murphy's Express at 10th and Bannock. Not being elaborate, but neat; and you should have seen it before these things were planted. This kind of landscaping outside gives one the impression that possibly the firm will take



DELISHMENTS MAY TIVE TOO

...e kind of care of your business.
The center picture on the left is of
...h attractive plant of the National
Bruit Co. at 3100 E 40th Ave. and
...ht at the bottom, left, shows one
...ite scene on the very attractively
...adscaped grounds of The Western
Appliance Corp., at 201 S. Cherokee.
The center picture will be recog-
...ned by most people as the entrance
...the Gates Rubber Company's new
...ilding on South Broadway. This
...erance flanked with the plantings
...both sides gave a cheerful spot of
...or all last summer, and is still at-
...ractive this winter even without the
...ing plants.

The top picture on the right shows
...h front of the Maplecrest Turkey
Farms, Inc. at 3601 E. 46th Ave. and
...h center right the office building of



the Pacific Intermountain Express at
3223 E. 46th.

Bottom, right shows the familiar
front of the Bredan Creamery at 1123
S. Broadway, where attractive arch-
itecture blends with attractive plant-
ings to make of a commercial house a
thing of beauty.

TREES AND THEIR RELATIONSHIP TO YOUR ELECTRICAL SERVICE

Paper given by
A. E. PERRATEN

At Rocky Mountain Horticultural Conference, Jan. 3, 1951.

IN order to beautify our City and to enhance the value of our property it is an accepted universal practice to plant and cultivate trees. In the forests and fields the trees are usually in their natural or original surroundings, while in towns and cities their location is the result of planning, after a fashion. In order to provide electrical service at a reasonable cost it is necessary in most cases for the Electric Utility Company to install overhead wood pole service lines in the streets and alleys. Their location is also the result of planning which frequently calls for the poles to be placed in line or parallel with the trees. Since the Customer is concerned

Trees crowded like these become a distorted mass of limbs reaching for the sunlight.

in each of these objectives, namely, the planting of trees and the receipt of electric service at a reasonable cost, it is obvious that a better understanding of this relationship may be beneficial.

The Engineer, in planning his service line is aware of the benefit of the tree. He is in most cases the owner of a home and takes pride in his own trees. A large portion of the materials required in the construction of the lines are supplied by trees. The poles are usually Western Red Cedar, Lodgepole Pine, Long Leaf Yellow Pine and Larch. The crossarms and timbers are usually Douglas Fir. The pins supporting the insulators are of Locust. He knows also that a line constructed in an area barren of trees is very conspicuous and at times causes complaints of obstruction of views from picture windows, etc. Where trees are present he finds less objection from this cause, for the trees tend to hide the poles and make them less conspicuous.

The route of the line is dictated by the location of the source of energy and of the ultimate customer and the electrical feeder pattern commonly employed. In cities where the streets and alleys are more or less regular, as in Denver, this electrical pattern takes the form of a main located at intervals of every fourth or fifth avenue running east and west with laterals tapping the main at each alley and running north and south. With this pattern in mind it is apparent that the majority of conflicts between service lines and trees could be avoided if you planned your trees to be lo-



cated not on the alley line or the east and west avenues. The alley and rear lot lines are usually dedicated in the original plot plan for the several utilities and it will defeat this purpose to a large degree if the lot owner lines it with trees. These trees are usually planted for screening purposes which can be much more effectively done with shrubbery.

Since most of the service drops from the Company's lines to the houses cross over the customer's back yards, trees planted in that area also interfere with continuous service. During heavy snow storms while trees are in leaf, one of the major causes of service interruption is due to the breaking of service loops by broken tree branches in back yards and along the alley line. In a severe snow storm last spring some 1200 service wires were broken down in Denver in this manner.

The avoidance of planting trees on some of the east and west avenues is also desirable but the utilities recognize that this is a large request and that under certain circumstances trees would be an asset to the property owner. Where this condition exists and the property owner wishes to

plant trees on the avenue, he can still be of help if the best suited tree is selected and properly located for good coordination with the service line.

For best coordination, the upright type should be avoided. These species are fast growing, resulting in relatively low wood strength and will ultimately cause trouble. The height at maturity is from 80 to 85 feet, making it impossible to build over them with the usual service poles. The spreading or preferably the horizontal type with heights at maturity less than 50 feet are more suitable. The White Birch, certain species of the Maples and Elms and the Willow are of this type. Wherever possible, the poles and trees should be lined up in parallel lines instead of in the same line. A better trimming job can be accomplished by avoiding the necessity of topping the tree, this will permit the tree to assume a more natural shape and control can be obtained by judicious side trimming. In addition to the proper selection of species and types and the off setting of their respective lines, improved coordination can be obtained by proper spacing. Trees planted too close to each other

Trees of smaller scale, properly spaced, may grow indefinitely with no conflict with each other or wires, and become more and more beautiful with age.



will not develop into their natural shape but will become distorted in their effort to get to sunlight, thereby increasing the problem of controlled trimming. At the time of the original planting, then, if the property owner will try to visualize the mature tree with respect to its surroundings, better spacing and location can be determined.

As mentioned previously, the most common location for conflicts between trees and service lines in Denver are in the east and west avenues and in the alleys. The north and south streets towards which the majority of the residences face is used to a much less degree for service lines. Instead the rear lot lines or alleys are employed. For this reason the utilities have no concern with the type or species of trees planted on these streets except as it effects street lighting on thoroughfares such as Downing Street or York Street. The best coordination can be obtained here if the upright type of trees are employed permitting a 25' to 30' underneath clearance along the roadway. This is desirable because the street lighting luminaire, for best results, is mounted at around 28 feet above the roadway.

If some plans as outlined above were followed the normal growth of the trees could be controlled to the best interest of the property owner and the Utility. Actually this is not the case and the result is a serious problem. To handle this situation most utilities employ expert tree clearance men or contract this service to regular tree clearance companies. When these men approach a property owner for permission to trim his trees, permission is usually obtained after assurance of necessity and competence are explained. In some cases the property owner will question the necessity and ask, why not reroute the line or put the whole system underground? In some cases the line may be rerouted

but in most cases the feeder pattern has fixed the economical route and the line should preferably remain. To place the line underground it would cost from three to five times the overhead cost and since the property owner is interested in receiving his electric service at reasonable cost this usually is not advisable. In certain areas where the promotional agency desires the lines underground and it is so planned in advance, this type of construction is used. Due to the fact however that the rates are based on overhead construction, this agency is required to advance the difference in construction costs between the underground and the overhead costs.

The Public Service Company of Colorado employs tree trimming specialist Companies of national repute to carry on most of its line—tree clearance operations. The employees of these companies are trained to protect the health of the tree and as far as possible to maintain its natural beauty while carrying out their primary function of obtaining proper clearance between the line and the tree. This activity constitutes one of the major items of the expense of operating the Company's system. These expenditures are reflected in the rates charged for electric service. Therefore, both the Company and its customers are interested in reducing the cost of tree clearance work. A portion of this expense is necessary under any reasonable coordination plan but a worthwhile amount could be saved along with vastly improved appearances if a few simple rules are followed.

References:

Line Clearing Manual for Overhead Conductors, published by: Edison Electric Institute K10

Tree Trimming Practices, published by: Edison Electric Institute F10

Tree Clearance for Overhead Lines, published by: G. D. Blair

WE FIND BIG HORN SHEEP IN THE TARRYALLS

DON HADLEY

The air was crisp and the sun bright that December morning as our three cars left Horticulture House on Bannock Street. Our destination was the Tarryalls and the Big Horn Sheep. Morrison was the next stop to pick up another passenger. There were twelve of us in the party now. Up Turkey Creek, over pine covered hills and down into the Platte Valley, we go. The road over Kenosha Pass was a little icy but the hills were beautiful in the bright morning sun. The snow capped peaks across South Park stood out on the skyline. The little town of Jefferson was still there though a cold wind was trying to blow it away. We leave the main road and turn east for about twenty-six miles. Great herds of cattle are grazing peacefully on all sides. Occasionally, we drive right through the barnyard of some hay ranch. Now, we are following the Tarryall Creek. After passing the Tarryall Reservoir, we notice the hills are becoming more rugged all the while. The car ahead has disappeared around a hill. LOOK—there they are just below the road, a whole herd of Big Horn Sheep. Out come the field glasses but you really don't need them. You can see eight or ten of them near the creek only about a city block away. Then we drive on a ways and park the cars. There they are on a big rock just ahead of us. They seem to be all around us. Of course, they are moving for they see us now. I climbed up on the big rock and down on the other side was a Big Horn jumping down. He ran down to the frozen creek and disappeared in the rocks and trees across the valley. We watched four sheep cross the creek and show us their white bushy tails

as they climbed up into the timber. It wasn't long until they had all vanished into the Tarryalls. The whole skyline is a mass of red jagged rocks with pine forests at the bottom. It was a beautiful sight and long will be remembered by all. We had been royally rewarded in making the trip only ninety-five miles from Denver.

PROGRESS IN HORTICULTURAL EDUCATION

We must expect that a great deal of the progress in horticulture must come from the commercial and professional horticulturists. They are the ones who make their living from horticultural interests and it should mean more to them.

We have been pleased recently that these commercial people around Denver have begun to realize the value of knowing more about the background for their work and have been taking advantage of opportunities to learn more of the fundamentals of plant growth.

Dr. Shubert's classes last fall were well attended, largely by commercial tree men and nurserymen. The tree-men of Denver and the nurserymen of the state each have an active association which encourages their members to become more proficient in their chosen work. Mr. Pesman's landscape classes have attracted an interested group, at each course.

The other side of this move for better horticultural knowledge is for the home owners who employ these people to show their appreciation of better service, through better knowledge, by making it financially possible for these trained men to successfully compete with the untrained, fly-by-night, ash-hauler gardeners.



January's New Books at Library

New Crops for the New World, Edited by Charles Morrow Wilson. Before Pearl Harbor we imported from the Eastern hemisphere about 94 per cent of our essential tropical commodities. The author says, "Japan grabbed our sources of these vital products but luckily for us, all these crops can be grown successfully in the Western hemisphere."

Basic Horticulture, Victor R. Gardner, Prof. of Horticulture, Michigan State College.

Bacteriology, E. D. and R. E. Buchanan. In this latest edition an attempt has been made to keep in mind the needs and interests of liberal arts and science students, even though the emphasis throughout has been on the non-medical but technical phases of the subject. Household science is included here also.

The Nature and Properties of Soil, Liberty H. Bailey, Editor, assisted by technologists from Cornell University. Revised and latest edition. While a background of general geology and biology will be exceedingly helpful to get the most from this book there is much information to help the average gardener.

A Cup of Sky, Bonald Culross Peattie and son Noel Peattie.

Donors to the Library

Mrs. Charles B. Owen
Mrs. Van Holt Garrett
Vella Hood Conrad
Mrs. D. D. Sturgeon
(Dedication for grandchildren)
George W. Kelly
LeMoine Bechtold
Mrs. Chas. O Voight
Sophia Dispense
Roy E. Woodman

Plant Physiology, Bernard S. Meyer, Ph.D. and Donald B. Anderson, both authors professors of Botany. Climatic Cycles and Tree Growth by A. E. Douglas of Carnegie Institution and Steward Observatory.

Adaptation and Origin in the Plant World, the role of environment in evolution, by Clements, Martin and Long.

Tree Trails and Hobbies, Ruth Cooley Cater.

Plant Sociology, by Dr. J. Braun-Blanquet.

Protoplasm, by Wm. Seifriz.

Economic Botany, by A. F. Hill.

Introduction to Cytology, by L. W. Sharp.

Biology of Flowering Plants, by MacGregor Skene.

Textbook of Systematic Botany, by D. B. Swingle.

Root Development of Field Crops, by John E. Weaver.

Fundamentals of Cytology, by L. W. Sharp.

Flowers and Flowering Plants, by R. J. Pool.

Principles of Genetics, by E. W. Sinnott, L. C. Dunn and Th. Dobzhansky.

Introduction to Plant Anatomy, by A. J. Eames and L. H. MacDaniels.

Introduction to Plant Pathology, by F. D. Heald.

Plant Physiology, by E. C. Miller.

Nature and Properties of Soils, by T. L. Lyon and H. O. Buckman.

Gray's Manual of Botany, by M. L. Fernald.

The writer looks with special favor on "A Cup of Sky."

The name of Donald Culross Peattie brings to mind all of those other beloveds; "A Prairie Grove", "Green Laurels," "Flowering Earth" and many more, written for all that love the beautiful. The chapters here concern wind, water, sunlight, butterflies and the song of birds; then all too suddenly the five large letters in that genus "Ferns" jerks the reader back to earth.

To each chapter Peattie brings accurate and systematic garden facts, but always there is an Apollo, always

there is a PIERIAN spring. In the beginning Peattie tells of his own garden, of an enclosed green place, of an ivied column of stone, "with a basin on it for the birds to drink from." At the basin's rim stands a little Saint Francis, blessing the thirsty at his feet. You read on and on until you come to the last chapter, OUR HEAVENLY EARTH, written by the son, Noel. With reverence like the man of Assisi for birds—, we can stand off and look with him at the earth as it should be, when its miraculous good fortune shall be realized, and secure from dangers within and without; this world will be plowed and sailed in peace, and will roll rejoicing through the depths of space.

HELEN FOWLER.

HAVE YOU

Ordered your seeds and studied the needs of your shrubbery border?

Sprayed your trees with miscible oil or lime sulphur solution?

Painted and sharpened your tools?

Made an inventory of your garden supplies?

Screened and brought in your soil if you plan to start seeds in flats?

Taken care of all your hose, I see it lying carelessly in the snow in many yards.

Taken a look at any and all of your perennial plants, to see if they may have been heaved out of the ground? Fill in the big cracks you may find and push plants back in the ground.

Found out that Peonies seem to produce better flowers after a continual heavy freezing during the winter? They do not need mulching nor protection of any kind unless they have been newly divided. Make the covering in this case very light.

Looked at the tender plants in your

rock garden? Evergreen boughs, left over from Christmas should be applied to act as a windbreak. Do not make this covering too heavy, the plants should be plainly visible under the mulch.

Found out that your rock garden should be bigger? Now might be a good time to collect the rocks. Count cobble stones and these fancy rocks out. For good looks use moss-covered rock.

Found mealy bugs or aphids or scale on your house plants? Use heavy soap suds for aphids and mealy bugs but rinse off after an hour or so. Scale should be scraped off with a light brush or cloth and the foliage rinsed later.—H. F.

ANNOUNCEMENT

We expect to repeat our wonderful and amusing auction of "Antiques and Horribles" at Horticulture House some time in May. Please begin to save your objects of art and your ancestral junk to donate to this affair. More details next month.

STAKES AND STAKING

What Should Be Done About Plant Supports to Produce Beauty and Symmetry?

STAKES at any time in a garden never look well, so staking should be done only when necessary to keep plants from drooping or loosening at the roots and to protect from wind and storm. Use stakes sufficiently strong but never taller than the flower head. Bamboo canes or thin wooden stakes are best for most flower borders but for heavy plants, such as Dahlias, inch-square posts are needed. Endeavor always to hide the stake behind the foliage. In tying, use raffia, and make the plant really solid but allow plenty room for stem development. Take special care to **SPREAD THE STEMS OUT** as you stake and not gather a number of stems together like "a bundle of sticks." Never try to get along with but one stake—several must be allowed for each plant, adding only as stems heighten. You will find a little ingenuity will help here.

As is done in so many cases, the loop is placed around the stem first instead of the stake. Tie raffias round the stake first, then round the plant and back to the stake so that the knot is made against the heavy support and not against the stem. Begin early, do not wait until June when damage might occur from those quick twistlers we sometimes get then.

Staking is specially necessary for: tall plants topped by leafless flowering stems; weak-stemmed plants with heavy tops; tall plants in secluded places; those that have been disbudded, which have lost their natural side supports; cut flowers when long stalks are desired.

SOME PLANTS THAT NEED SUPPORTS: Aconitum, Clematis

recta, tall Campanula, Dahlia, Delphinium, Helenium, some heavy-topped Phlox, some Lilies, Eremurus. Hollyhocks and others that have a fence, house or garden-wall for support need no staking. We pinch out the center of plants sometimes to keep low and bushy—these need no staking.

It is well to inspect the ties as the season advances and to loosen them as required.

HELEN FOWLER.

Questions and Answers

Will you name a few perennial plants that do well in acid soil. Longmont. Mertensia virginica. Bleeding hearts that is Dicentra eximia. Columbine, Rocky mountain. You will find this plant excellent if planted in acid soil, puny, when planted in neutral soil. Monkshood, Valeriana officinalis, Caltha palustris. Iris verna, Lilium philadelphicum and L. supurbum, Globeflower (Trollius) Trillium undulatum (Painted Trillium), Cimicifuga racemosa (Snakeroot). H. F.

Does Phlox divaricata require sun or shade?

Morrison Bartlett, Salt Lake.

Phlox divaricata is a species of the *Phlox* group, having purple-blue flowers in tulip time. It likes rich soil, and grows to a foot or more in height sometimes. Its color is particularly effective in shade, even in dense shade. P.d. Laphami is grey-blue in color and perhaps the best of the varieties.

H. F.



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THE IZAAK WALTON LEAGUE OF AMERICA

BY J. W. PENFOLD

Western Representative

IZAAK Walton is best known for his work *The Compleat Angler*. However, one need not be a confirmed sports fisherman to enjoy the volume. Rather is it must reading, along with Thoreau's *Walden* and the writings of other natural philosophers, for him who has the vision, the imagination and the appreciation of intangibles to delve into the imponderables of life and to see in living creatures, animal and plant, something more than a gift of nature to be exploited for profit.

The conservation minded group who founded our organization nearly three decades ago were happy in their decision to take Izaak Walton's name. This, in spite of the obvious tendency of the unknowing (both as to Izaak Walton and the League named after him) to assume that the League is an organization of fisherman. True enough, many of our members are fishermen and hunters, and find in their outdoor sport a particularly sat-

isfying form of recreation. It is perhaps significant that in the League motto, "Defenders of Soil, Woods, Water and Wildlife," wildlife takes the last position. Surely the beasts of the field and the fishes of lake and stream, like man cannot exist unless the basic resources of soil, vegetative cover and water are wisely managed.

With this philosophy it is not surprising that the Izaak Walton League consistently has been a leader in programs aimed at securing wise resource management and in the front line of battles to prevent exploitation of resources for quick economic gain rather than for the most good to the most people over the long haul. It is not surprising that we place great importance in the intangible values of mountains, streams, forests and unspoiled wilderness, that we believe game animals and birds have large value to man beyond their availability as targets, that we resist the erroneous

preaching, so prevalent of late, that physical progress, alone and as such, automatically will satisfy all of men's complex social, cultural and spiritual requirements as well as the economic.

In the last analysis, man himself is an integral part of an ecological whole. He is an inseparable part of his environment. That man has been given the ability consciously to modify his environment, carries with it the obligation and responsibility for him to use his talents wisely. The Izaak Walton League, a wholly voluntary group with no financial, political or partisan strings to it, seeks to stimulate acceptance of these responsibilities by the individual and weld all into a strong influence for the betterment of our Nation.

— ♣ —

CAUTIONS

Do not allow any but skilled gardeners to care for climbing plants, which form permanent coverings for walls. Many need pruning now but others, must, on no account, be cut back until after flowering. Climbers which will flower on new wood made last season are among those NOT to be pruned now; however, you may tie in the branches so the flowers will make a good showing when they bloom.

* * *

If tubers which you have set aside for spring planting, have shriveled in spite of you, place them in very slightly-damp peat moss; look out for heat, however, in order to avoid premature growth.

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STATE PARKS FOR COLORADO

H. N. WHEELER

ONE state in the United States has no state parks or historical monuments set aside for public use, and that state is Colorado, which has many places worthwhile and suitable for such purposes. The foothills and plains are especially in need of such developed areas, since the mountainous parts of the state are largely in National Parks and Forests.

State parks have proven their worth many times over, in other states, and according to the National Park Service, in 1949, were visited by 100,105,274 people. The records of the National Park Service show that, in 1946, 7,844,266 acres of land were incorporated in the state parks of the 47 states.

Some of the parks are equipped with cabins where families may stay, at a reasonable cost, for as long as two weeks on vacation. In most of them swimming can be enjoyed, fishing is available, tennis and horseshoe courts are ready for those who wish wholesome exercise.

In Indiana, the first state to really develop a park system, and also in some other states, small fees are charged, which help pay the cost of administration, and is not burdensome upon those who enjoy the privileges. The charge in Indiana is 25 cents per campsite, or 50 cents, if electricity is available. There are lodges and hotels under lease in eight of the Indiana parks where room and board is \$4.75 to \$5.35 per day per person. Other states have similar arrangements.

Accompanying pictures all by U. S. Forest Service. Showing (top to bottom) State Parks in Indiana, Minnesota and Pennsylvania.



The great need in these days of stress and excessive speed, is to get out into the woods and quiet places, where one may relax, take stock of himself and get back to sane thinking, and rest body and soul. Parks serve this purpose, where a person can wander down trails among trees and rocks, along streams and lake shores, see the flowers, birds, and animals in their home surroundings; and hear the rustle of the leaves and the running water, the sighing of the wind.

Colorado, the great mountain tourist state, has many lakes and reservoirs and stream courses where state parks can easily be established and become a real boon to the people of the state and visitors from outside. Historic spots should be set aside and restored and developed before too late.

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SOME QUESTIONS ANSWERED

I should like to know the name of three or four good shrubs which have blue-black berries—Denver.

Answer—The following do well in this area: *Mahonia aquifolia*—Oregon grape; *Viburnum cassinoides*—Whitethorn; *Viburnum dentatum*—Arrowwood; *Viburnum lentago*—Nannyberry.

I am confused at the many insect killers found on the shelves of the seed companies. Is there anything better than Arsenate of Lead? Boulder. Answer: A formula from the well known Dr. L. M. Massey is most efficient for the control of mildew and black spot and if tobacco dust is added you will get the aphids also, Sulphur for fungus control, Tobacco dust for aphids and arsenate of lead for chewing insects. Formula: mix 9 parts of dusting sulphur with 1 part of arsenate of lead. Perhaps nothing better.

I don't know one thing about the pruning of the purple clematis, please tell me. Fort Collins. Answer: Clematic jackmanni can soon be cut back to within a few inches of the old wood or in the case of young plants to within 10 inches of the base.

In reading garden books I often come across the word, "Sport". What is a "sport"? C. S. If you mean what I mean a "sport" is the natural break from the usual characteristics of a plant. A change in color and form is often welcomed by nurserymen as it may mean a chance for something new in the plant world.

Please explain what the word "spit" means. Cheyenne. Answer:

A "spit" is a layer of soil as deep as can be conveniently turned on a spade. When double-digging is practiced the soil is broken up to a two-spits depth.

Are there any annuals that I can plant in shade? Denver. Answer: Annuals, none of them are lovers of shade, but the following may make it in partial shade: Sweet Alyssum, Sweet Sultan, Clarkia, Chinese forget-me-nots, California Poppies, Forget-me-nots (true), Drummond's Phlox, and common Pansies. These are just a suggestion for trial. They have done alright with me.

I need perennial ground covers for planting in the shade. Groundcovers for use in the sun. Wheatridge. Answer — *Cerastium tomentosum* (Snow-in-summer). *Dianthus plumarius* (Common Pinks). *Helianthemum mutabile* (sunroses). *Iberis sempervirens* (Hardy candytuft) Difficult to transplant except in pots. *Nepeta mussini*, lavender-blooming mint. *Phlox subulata*, in pink, white, red, rose and lavender (Creeping phlox). Many sedums. Some sempervivums. *Thymus serpyllum*. The low-growing veronicas. *Vinca minor*, although this perennial, prefers shade.

Groundcovers, perennial, for shade. *Ajuga*, both *A. reptans* and *A. genevensis*. *Aegopodium podagraria* (Goutweed). *Asperula odorata* (Woodruff). *Hedera helix* (English ivy). *Mitchella repens* (Patridgeberry). *Nepeta mussini* (Not too much shade). *Pachysandra terminalis* (Japanese spurge). A few sedum. *Vinca minor*. *Vinca major*.

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FEBRUARY GARDENING

Anything can happen in February—and usually does. There may be open weather when the ground thaws out and some transplanting can be done, or if we miss our usual last of January storm, it could be bad in February. Some things can be done in any event.

Complete your plans for any new garden work or any remodelling. Get the plants ordered and possibly stake out the ground where they are to be planted. Any unfrozen spots may have the soil dug up and improved with humus of some kind.

One of the important jobs of the season can be done this month if the weather warms up for a few days. That is to put on the dormant spray. For scale insects on such things as Elm, Ash, Lilac and Dogwood an oil emulsion spray is used. For evergreens, to control spidermites tip-galls and some aphids, the lime-sulphur spray is very valuable and safe.

If you get restless for spring, bring in a few twigs of flowering plants, put them in water and if the buds have not already been winter-killed you may have some good bloom indoors. After a week of warm weather you may be able to find some early wild flowers on south slopes in the foothills.

If we do have a few days of good weather don't let it fool you into removing the mulch and shade from tender plants. More winterkill happens after February than before in ordinary years. (Are there any ordinary years in Colorado?)

Necessary trimming on trees may be done at any time now and this is a good time to have trees removed that must come out. Some construction jobs can also be done.

By far the most important garden job this month is concerned with books, bulletins and catalogs. You should take time now to study up on all those things that bothered you last summer. Learn how to identify insects, trees and wild flowers. Come in to the library at Horticulture House and get a list of all the books on the subject that you are particularly interested in.

When you have done all that can be done for your own garden then find out what state-wide or community projects are desirable that you can give a boost to. We are all interested in seeing a better setup for roadside Parks and improvement as well as establishment of a State Parks set-up. I noticed in an English Garden magazine that the group in England mentioned their assistance in preserving our Redwood Groves as one of their principal projects, so you see there is little danger of your going too far afield if the project is a good one. There is much to do to improve the appearance of the approaches to any community in the state. These are our rawest spots and need much attention.

Check over your garden about once a month at least for broken limbs, signs of scale and other dormant insects and be sure that the ground is not dried out in sunny spots.

Learn to identify woody plants by their bark, twigs, leaf scars and general character. Then you will know them at any time of year. Flowers and leaves as identifying characters are more conspicuous but last only a part of the year.

If your garden has good basic design it should be attractive even when covered with snow. Get out the camera and get some pictures of the patterns formed by walls, platforms, walks and sunken areas.



March, 1951

The Green Thumb

COLORADO'S GARDEN MAGAZINE





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The Green Thumb

Vol. 8

MARCH, 1951

No. 3

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Picture on front cover shows entrance to home of Mr. and Mrs. John Evans; Photo by C. Earl Davis. Picture on rear cover taken in Denver City Park by Chas. J. Ott.

GEORGE W. KELLY.....Editor MRS. HELEN FOWLER.....Librarian
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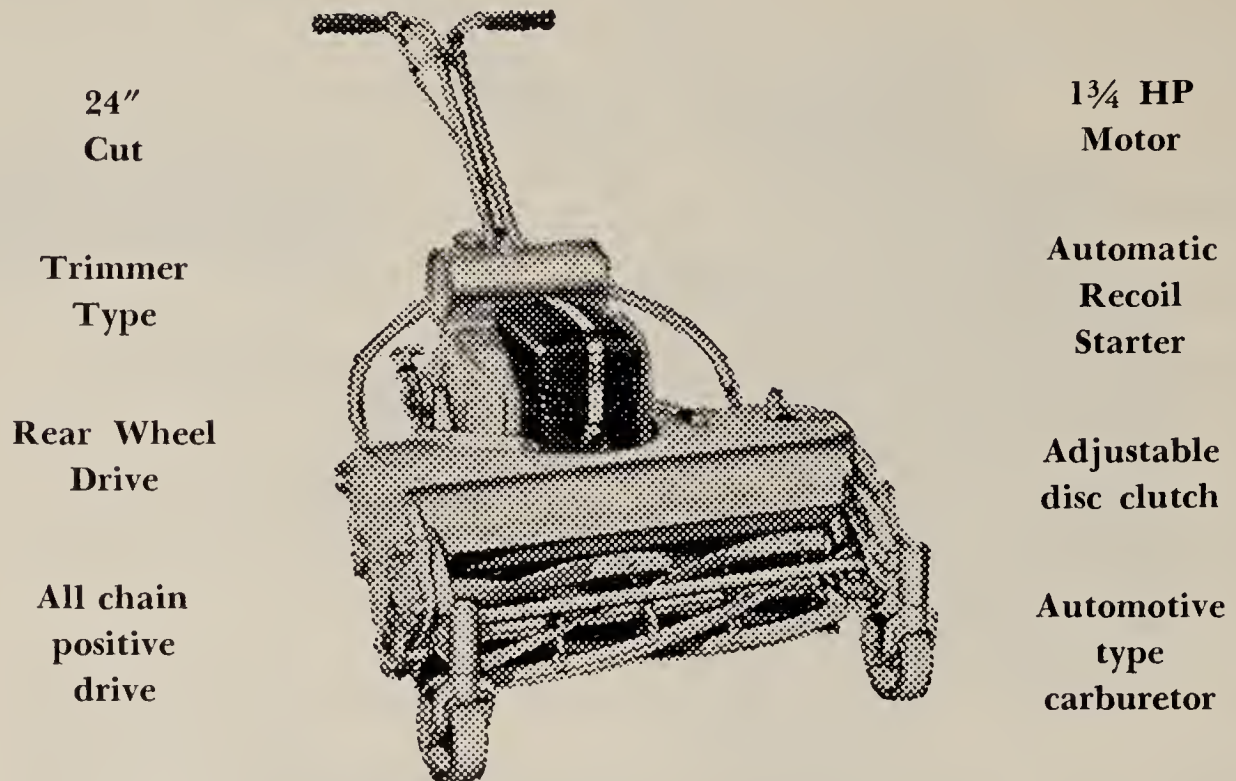
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"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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Secretary-TreasurerMildred Cook

March Schedule

- Mar. 3 and 4. Snowshoe and ski trip to Leadville. Leave as convenient Saturday. Driving time 4 hours. Register by Wednesday. Leader Charlotte Barbour.
- Mar. 15. This is to be another movie night at Horticulture House. This time the pictures will be presented by representatives of the Fish and Wildlife Service, and you can depend upon it that they will be most interesting. Program starts at 8 P. M.
- Mar. 18. Snowshoe trip to Lamer-tine in Snowtime. Leave Horti-culture House 8:30 A. M. Drive 105 miles, walk 7. Leader Clair Cashmore.
- Mar. 29. Planning Your Garden with Scissors. A brand new and different sort of garden planning spree will be going on at Horti-culture House on Thursday eve-ning, March 29th at 8 P. M., when Mrs. Kenyon Vail will bring her paper and scissors and show the garden enthusiasts how to plan their garden with scissors. Before the evening is over everyone should be able to see their own garden in all its glory and color. If you plan to attend this meeting be sure to bring a large piece of brown wrapping paper, at least a yard square, a pencil and a pair of scis-sors.

THANK YOU

Our advertising runs at about ten pages this issue. About a quarter page higher than at any other time. We appreciate this fine support from our friends and we hope that they find it profitable to continue. Surely no publication reaches the gardeners of the community like the Green Thumb.

We also appreciate the efforts of Mrs. Elsie Smith who was in charge of the advertising during January, and through whose efforts this nice amount was lined up.

“LOOK AND LEARN”
GARDEN VISITS

The Horticulture Association is planning a series of visits to active gardeners' gardens where the planning and care are largely done by the owner.

There will be three tours on dates in June, July, and August.

Those who have gardens they would like to exhibit and explain to other garden lovers are asked to com-municate with Mrs. Paul L. Hastings, DE. 9300.

This Look and Learn series is de-signed primarily to show what can be accomplished in gardens by per-sonal skill and knowledge.

Tickets \$2.00 for entire series.
\$0.75 single trip.

A SECRET GARDEN

BY JOAN PARRY

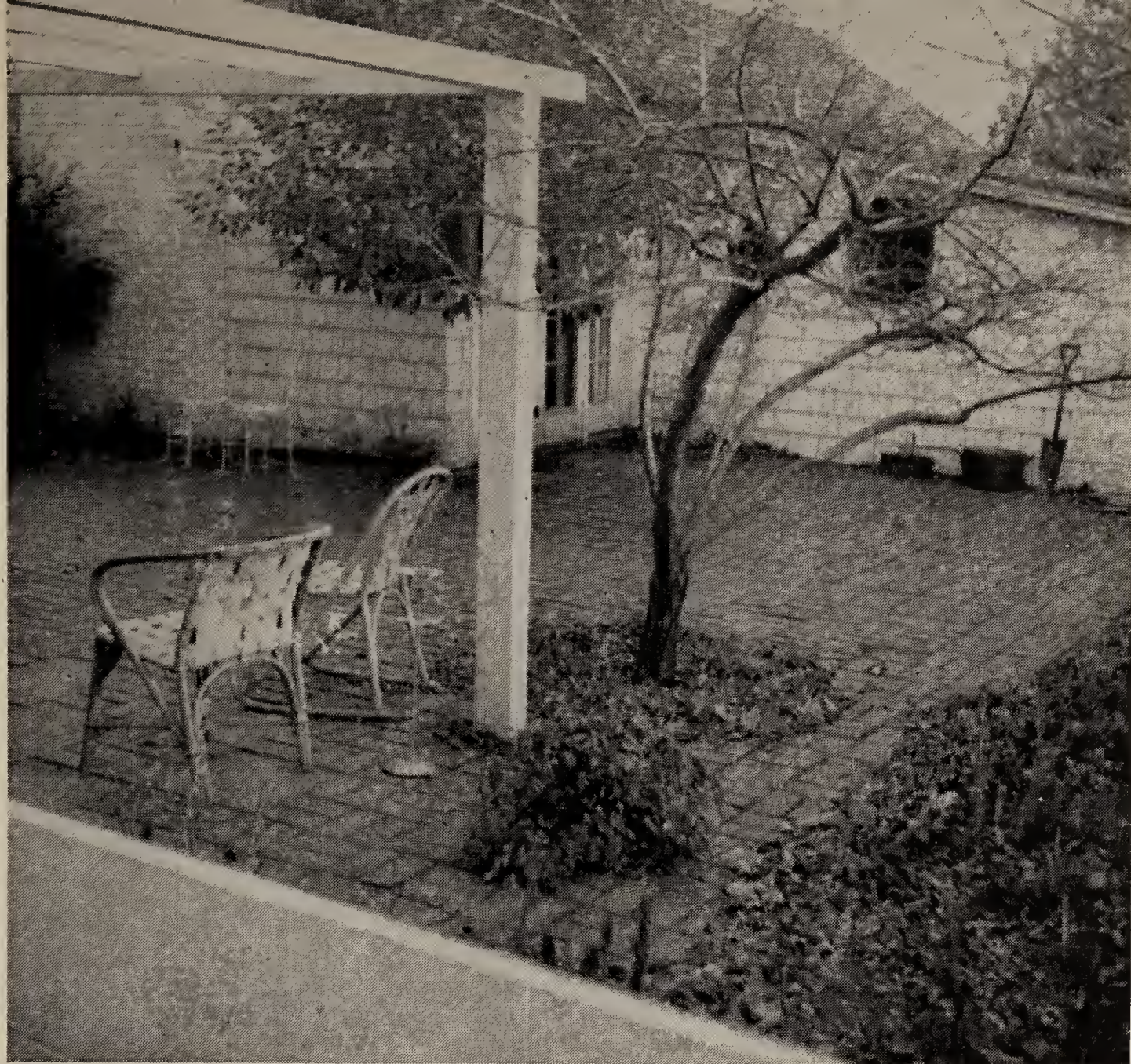
WHAT is the purpose of a garden? It seems almost too obvious a question for an answer; yet it can be answered in many ways. Some need the garden as fitting complement to a large house, much used for entertaining. Often this is a display garden, formal and deliberately neat, cared for by the most part by hired help. Some need a garden as ground to grow specimen flowers or only vegetables. Some need a garden merely to furnish the space surrounding their house in a manner similar to the neighbours' gardens, and so conform to the general type of street front garden.

And there are others, real gardeners, who need a garden as a neces-

sity, and even they may be hard put to it to define something of their own creation which fills for them a definite need. To them the soil itself gives something back as they work it, and out of it they create a place of repose. Perhaps a real garden should have as its unfailing qualities beauty and usefulness. It should be beautiful to the eye and useful for at least some fresh garnishings for salads, for fruit and vegetables. Without simplicity it cannot be restful. And perhaps also it should have some small air of secrecy about it, since it cannot but contain some of the characteristics of its creator. There are not enough gardener's gardens, not enough secret gardens.

I think that the garden Mrs. Persis





M. Owen has created is one such secret garden. There is no hint, as you walk down the narrow path with high hedges on either side, that you will come on so individual a place. I saw it in late fall, with the round yellow windfall apples on the green grass, and the last few bunches of Niagara grapes, frost withered and wrinkled but still sweet, hanging where they had ripened in the western sun.

Following the path round to the east side of the house is an open patio, brick paved, a bush fruit tree growing in its square of soil here and there, and stretching beyond it a slope covered with shrubs and trees. And, continuing round the house you come full circle to where you started, the south side of the house with its almost formally shaped beds, divided by the brick path and bounded by a low white picket fence.

I can imagine what it must be like

to sit on spring afternoons and evenings in the patio, and walk through woodland that shelters house and garden from the East. There would, I know, be countless spring bulbs there, and after them the lilies. Plum and crabapple bloom and the faint trickle of the wisp of water that goes to join the minute stream that meanders on its way to the open country beyond.

No one would deny the place its beauty and its use. The patio, easily accessible by a door from the living room and a window from the kitchen, through which no doubt good things are passed outside, is a perfect outdoor living room that grows into the garden almost imperceptibly.

It is not easy to describe a garden that possesses such elusive qualities. But here through deliberate design, a careless orderliness has been achieved with complete simplicity. It is a secret garden indeed.

A SOUPCON OF METAL

Copied by permission from the
INDUSTRIAL BULLETIN OF ARTHUR D. LITTLE, LTD.

WITH more sensitive instruments and techniques, biochemists can now prove an area of nutrition previously neglected, that of the "trace" elements, which may be as important to health as the almost equally well-hidden hormones, vitamins and enzymes. Many plant and animal diseases have been ascribed to the inadequate concentrations of trace elements in the soil or lavage and cured by increasing them, but the role of these elements in human nutrition has been largely a subject for faddists and enthusiasts. Now that the adequate means of investigation are available for biochemical research, a program is under way at Massachusetts Institute of Technology, in collaboration with Peter Bent Brigham Hospital and the Harvard Medical School, to measure the minute amounts of these elements in the body, both healthy and diseased, and to explain their relation to deficiency diseases and other vital systems. There are many indications that such work may greatly change present concepts of proper nutrition and add to understanding of human disease.

The elements in question are present in the body in concentrations as low as thousandths and millionths of a gram—and a gram is only a twenty-eighth of an ounce. Detecting and measuring them requires such new approaches as quantitative emission spectography, microchemistry, radioactive isotopes, ion exchange columns, and polarography, many of which are developed for fundamental investigations in chemistry and physics. Equipment in the MIT spectroscopy laboratory, for example, usually used only for advanced physics research, is now employed in this study.

The new techniques have revealed such metals as barium, titanium, lithium, rubidium, which were not previously known to be present in man. They have also facilitated study of the previously recognized metals, including copper, manganese, zinc, silver, cobalt and strontium.

Deficiency Diseases

The importance of trace elements in agriculture and animal husbandry provides a basis for presuming their importance to human health. Many diseases are due to insufficiency of a metal; copper deficiency in lambs brings about serious disorders of the nervous system. Manganese deficiency causes lameness in chickens, pigeons, and pigs, and serious disorders in oats, peas and sugar beets. Lack of boron also causes "crown rot" in sugar beets. Zinc deficiency causes mottling of citrus, pecan and apple trees, which seriously damaged crops in Florida and the Southwest until it was controlled. Fortunately, deficiency diseases can be cured readily by the addition of the lacking element to the nutrient. Adding cobalt to the feed of cows corrects an otherwise fatal condition, one of the prominent symptoms of which is anemia. The importance of this element to human health has recently been emphasized by that Vitamin B₁₂, important in the treatment of one type of anemia, contains four per cent cobalt.

Frequently, disease symptoms arise from intoxication by a metal, or from an imbalance of complimentary metals. For example, too much molybdenum causes diarrhea, deterioration of coat, and eventual death of cows, but the condition can be cured by

feeding copper. Recent studies in Australia and England have shown that an imbalance of molybdenum and copper is responsible for some diseases of sheep.

Understanding the role of the trace elements may in time provide valuable information to agriculture, for there have long been suspicions that some soils and some agricultural methods produce crops which are subnormal, nutritionally, though the yield may be high. The problem is immensely complicated by the fact that a varied human diet comes from many soil sources.

The relationship of the trace metals to the vital enzymes is a particularly interesting phase of the MIT program, and there is reason to believe that the trace elements can justly be compared to the vitamins and their effects. The program is a long range one, and has concentrated thus far chiefly on finding which trace elements are present in the body and in which concentrations they occur normally. Together, they comprise less than 0.5 per cent of the mass of the human body. The work will go on to determine whether the concentrations change when disease is present, and if this change might be of diagnostic significance or potential therapeutic value. The role of hormones and vitamins in modern biochemistry is sufficient proof that what is quantitatively minute is not necessarily insignificant.

BEGINNING IN MARCH

Listen to the Green Thumb program on KOA every Saturday morning at 8. Write in your questions and suggestions for making this program the most helpful to gardeners in the Rocky Mountain Area.

BENJAMIN SWEET LECTURE APPRECIATED

The evening of Thursday, January 18th, found a large and enthusiastic audience at Horticulture House to hear Mr. Benjamin Sweet tell of his trip to Yugoslavia. Some thought that this subject might be a long way from horticulture but no one left without being impressed with the fact that conditions such as now exist in Yugoslavia could affect not only horticulture but our whole way of life.

Mr. Sweet gave a very vivid description of conditions as he saw them which kept everyone fascinated during the talk. Before he had talked very long everyone in the room was happy he was living in the United States. It seemed incredible that any people would submit to conditions such as exist in Tito's country.

This lecture of Mr. Sweet's was greatly appreciated both for its timely information and the fact that Mr. Sweet donated his time which gave the association a nice little sum for the library fund.

All who attended owe a great debt of thanks to Mr. Sweet, to Mrs. Moras Shubert, Program Chairman, and to Mrs. Helen Fowler, Librarian, who contributed much time to promoting this meeting.

A GARDEN CLUB THAT WORKS

The Home Garden club of Denver has recently voted \$25.00 to buy a needed folding table for the use of the Herbarium committee at Horticulture House. This in addition to furnishing a group of workers every week or so to help mount and classify the Herbarium material under the direction of Mrs. Kalmbach. We appreciate this kind of organization - which practices what it preaches.



A SATISFYING INDOOR GARDEN

I guess that you can't have everything, said Mrs. Roy Roll when I was listing the 40 or more plants in her little conservatory and discovered that there were no African Violets. It is possible to have a beautiful collection of house plants without African Violets after all, and Mrs. Roll certainly has a great variety of fine things.

The little conservatory, plant window or greenhouse just evolved, Mrs. Roll will tell you. It is about 8 feet wide, 3 feet deep and head high, with glass sides and top and linoleum floor

with drain. Soil, light, and humidity are controllable, but as it is just off the living room, the heat is that of the house. Many plants like this heat, but a few find it too hot.

The prize bloom when I saw the plants was a double pink Chinese Hibiscus. This was a grand bloom. Other things in bloom at this time included several kinds of Begonias, Shrimp plant, Billbergia, Chinese evergreen, Euphorbia and Azaleas. The Stapelia, Gardenia, Cypripedium, Passion flower and Amaryllis were just ready to bloom. Other plants included: Calla lilies, Maranta, sev-

eral kinds of Coleus, Crotons, several kinds of Nephthytis, a Burma lily, several kinds of Ivy, several Orchids, Rhoeo, or Moses plant, Marica, several Euphorbias, several kinds of Cactus, Cyclamen, Bird-of-Paradise, Cryptanthus, Clivia, several Aloes, Christmas Cactus, Maidenhair fern, Bougainvillea vine, Hoya, Bryophyllum, Kenilworth Ivy and Palm.

An indoor garden, such as Mrs. Roll has, can be a great source of satisfaction, especially in winter or at times when it is impossible to do the strenuous outdoor gardening.



THE GREEN THUMB AGAIN

A rather clever explanation of the "green thumb" legend appeared in the spring Bulletin of the Eastern New York Gladiolus Society. Eugene Stern, writing an article called "Green Thumbs," reasons as follows. "Auxin and indoleacetic acid in minute quantities act as stimulants to plant growth. These materials are excreted through human skin. Some people excrete more than others. Therefore, thinks he, some people have "green thumbs". The amount of Auxin needed, he tells us, is so very tiny that a touch by the right person will get things off to a fine start." Well—could be H. F.

Significant Remarks

By Speakers at the Annual Meeting of the Colorado Association of Soil Conservation Districts, held in Denver January 30 and 31, 1951

"The new frontiers—the new land—is on your own farm."

"We are all just custodians of the land we are on. We must preserve it for the future generations."

"Greatness of this generation will be judged by how well we have planned for the future generations."

"We can plan for increasing the size of America by increasing its production."

"We must think construction not destruction."

Governor Dan Thornton

"The story of the soil is the story of civilization."

"Man has been raising the devil with the plow for thousands of years."

"Forty-five hundred years ago, we had extensive civilizations which are now extinct because of their abuses of the soil."

"A nation endures that thinks to preserve its soil."

"We have already lost fifty million acres of our own good land."

Richard W. Trefz

Here's a suggestion for a poster that might help to do away with the sins of some picnickers and campers:

Don't Be a Litterbug

B. E. F.

NATURE APPRECIATION THROUGH GARDENING

BY ALEX KLOSE

For the Milwaukee Equipment Mfg. Co.

EDITOR'S NOTE—We strongly recommend that every member read the following story in its entirety. Alex Klose is not only one of the country's best gardeners but he has a philosophy of life that we might well all learn more of. We appreciate the permission of the Milwaukee Equipment Mfg. Co., makers of rotary tillage machinery, to use this article.

A noted psychologist recently said that what America needs most is NOT more of the "new look"—but more of the old outlook on life. To this he added the suggestion that Stevenson's "A Child's Garden of Verses" be read, which speaks of "the world so full of a number of things—I'm sure we should all be as happy as kings." There is a bit of significance in these lines, in that they were written for children; children who live, or should live, in a beautiful world, undulled or cramped by modern, often unnatural, social customs and standards. Their's is an inquisitive, exciting world, full of interest and curiosity. Children should live in what might be called the slower contentment of an earlier America—a period in which no attempt was made to pour synthetic happiness into dull lives through machine-made entertainment in a day when the very survival of life depended upon the power of perception.

It sometimes appears that children are the real philosophers in this world, while many adults have become sleep-walkers. A philosopher is often described as a seeker after knowledge, not the knowledge of a few things or a few classes of things, but of all things and all classes of things. Doesn't this definition fit a child, whose broad, eager outlook on life prompts such questions as "why, what for, where did it come from?" And isn't it because as children grow up they too

frequently, perhaps unconsciously, lose the intimate contact with this "world so full of a number of things" that they become sleep-walkers—sleep-walkers whose patience is sometimes strained at the proverbial "why daddy" questions? Perhaps they become sleep-walkers because the cares of the world compel them to travel at too fast a pace; a pace, which in spite of its speed, forces them into a back-water where they crawl over the canvas of life much like a fly, who in moving across a masterful picture, stumbles over meaningless lumps of paint.

The philosophical outlook on life by all normal children suggests that some effort be made for its further development through an appreciation of Nature. A start in this direction was made some years ago after the writings of Seton, Muir, and Burroughs appeared. These naturalists were the starting force for a wave of enthusiastic study of Nature in the schools of the nation. Since then Nature Study as an appreciation has gained favor in somewhat of a periodic cycle, a cycle which too often has been short-lived, sometimes ending in disrepute.

Every now and then a pressure is asserted to drop the study of Nature from the school curriculum and substitute for it a broad, generalized science course. It has been declared that Nature Study is obsolete—that it is a relic or carry-over of the horse and buggy days. To some it is looked

upon as a subject unrelated to the needs of modern life. Ofttimes it is suggested that more emphasis be placed on man-made things so that a fortune can be acquired before the age of forty in order that the remaining twenty-five or thirty years can be spent in wasteful idleness. This attitude of many people, including some educators, perhaps is assumed because the importance of natural phenomena is not seen or is taken for granted. Perhaps you too are thinking that the possibility of a child's becoming a professional naturalist is very small, so therefore, why should an interest in the soil, plants, birds, or animals be developed? Will a knowledge of these things ever be helpful, or just what is the value in a study of Nature? These are very definitely fair questions, questions which might be given more elaborate consideration by a Study Group than can be given at this time.

However, if in the past a keener appreciation of Nature had been developed in the minds of children, a great many destructive "isms" plaguing the world today would not exist in their present magnitude. The expression "an appreciation of Nature" is often used with a limited interpretation. To some it immediately brings to mind an absent-minded individual who wanders through the fields and woods with a butterfly net, mumbling a language of long, unpronounceable Latin words. Other associations with Nature appreciation are expressed in varied interests, such as those which are simply related to physical activities as hunting, fishing, hiking, swimming, or mountain climbing. Pictorial art which attempts to capture Nature's colorful moods on a photographic film or on a painter's canvas is an aesthetic appreciation of Nature. In fact, an appreciation of Nature can be portrayed through almost every human interest, from the purely phys-

ical to the religious. All of these Nature appreciation associations, either singly or combined, are of great value in the effect they have on the emotional and physical development of Man.

In spite of the various forms in which an appreciation of Nature can be associated, it is rather strange that Man limits his interpretation of the laws of Nature to the general concept expressed in the phrase "the survival of the fittest." Actually, the principles involved are of a far greater and different meaning. Despite his intelligence which elevates him above everything else found in the Divine creation, Man still remains a part of the general scheme of Nature. This suggests that out of a biological necessity, it is imperative that he adapt himself to his environment by a more complete understanding of it. For actually, Man's very survival lies in his ability to adjust himself to an environment which was designed for his well-being.

Man's false approach to an appreciation of Nature through his harnessing or conquering attitude is evident on almost every page of human history. His efforts to subdue Nature, rather than becoming a part of it, are visible in the desolate wastes, the dead cities, and the lost civilizations with which he, during his short inhabitanace, has marred the good earth. An imaginary flight through the pages of world history shows how Man's deliberate disregard for the things which the word "Nature" suggests has brought about what might be called world chaos. In every country of the universe Man's vain attempt to solve his so-called social and economic problems, with little concern as to how these should fit into the natural order of things, is clearly evidenced by his misinterpretations of the expression "the survival of the fittest." We Americans are, of course, just as much

at fault in this respect as the nomadic herdsmen who contributed to the formation of the great deserts of North Africa.

The principles applied to the control of an important life-determining factor—water, serve as an example. In the United States almost sixty billion dollars have been spent in erecting huge structures of steel and concrete across our streams. This program has been carried to a point where we begin to wonder if we have gone dam-crazy. The advocates of these dam programs point out the benefits derived from such projects as—recreation, navigation, water supply, power, irrigation; not to omit the big sales point, flood control. These dam projects, because of the vast amounts of soil they remove, and the impressive structures which result, leave a feeling of great accomplishment — of having again conquered Nature.

The wonders of dam-building are glorified to a point that even the Post Office Department saw fit to memorialize them by placing their pictures on a postage stamp. Perhaps the stamps which today are being placed in the albums of young Americans will in the future serve as objective lessons—pointing out how, by a lack of appreciation of Nature, we have purposely delayed and postponed the development of a sensible land-use policy for the whole nation. These pretty, gummed pictures may some day bewail the admission that a whole series of mistakes were made upstream. This confession is already being made, perhaps indirectly, by the reports of the Department of Agriculture which indicate that many of these dam projects will have become useless in less than five generations, and that the value of some of the largest of them will be seriously impaired within the next fifty years.

If the failure of these billion dol-

lar dam projects is only a part of the payment which will be made for the lack of Nature appreciation, perhaps the fair, glowing prophecy recently made as to what the last half of the century is to bring suggests that we change the title of a very inspiring song to—"God Help America"—for how can this nation expect the blessings of a Creator when it wantonly closes its eyes to a Divine order of things?

Men who understand the close relationship existing between the soil, trees, and animals have pleaded, too often in vain, for—not more tons of steel and concrete, but a few grass seeds and trees with which to hold back the waters before they reach the flood stage. Such projects should make a direct contribution to a sensible conservation of our natural resources and therefore warrant the concern and support of every true American.

Proper land use, and this isn't a study just for the farmer, requires a knowledge of all biological laws, a knowledge of the inter-dependence of all forms of life—the plants, the birds, the insects, the animals, and all the rest. A more general understanding of Nature certainly should make our people more conservation conscious long before such a study becomes an absolute necessity. In addition, an appreciation of Nature by children, and it doesn't make any difference if they're your own, your relatives', or the neighbors', serves as a practical means of teaching civics. Surely a child who appreciates the wonders of living things will not maliciously destroy a bed of flowers, vegetables, a tree, or any other part of his neighbors' property. After all, good government is dependent upon the individual units or homes in the community, and the activity of the individuals who make up that home unit.

In the olden days the little quotation "Idleness is the Devil's Work-

shop" was frequently used. Our modern, stream-lined world has changed that saying to "Inactivity is the First Step Toward Delinquency." Perhaps this in turn should be changed to "Inactivity of the Mind is the First Step Toward Delinquency." Any youngster who walks through a woods or park is certainly active as far as bodily motion is concerned, but is not very active mentally when he wilfully destroys or damages everything in his path.

In a discussion of this kind it is hardly possible to treat at length on the more tangible points of a Nature program. There is, however, an excellent way in which to introduce this thing called Nature to youngsters. That introduction can easily be made by you—through gardening. But don't make their gardening project the job of weeding Dad's prize winning tomatoes, or carting away the weeds that keep popping up in Mother's favorite rose bed. Rather, give Johnny and Mary their own plot from which they can contribute directly to the family dinner table.

Did you ever stop to realize that just as a child wants to bake when Mother is baking, to sew when Mother is mending, or to work along with Dad when he is acting the part of the home mechanic, so also does he want to garden if Mother and Dad are gardeners? The easiest way to avoid destructive activity in your home grounds is to provide a child with his own constructive occupation there. With a little encouragement children like the idea of having their own garden. But start them off on their gardening adventure on the right foot—namely with a garden plan.

Right now is a good time to start working on that plan. For this there is nothing better than a few rather large sheets of wrapping paper, a bottle of paste, some old seed cata-

logs, and colored crayons. With a little help the rows can be outlined approximately to scale and the proposed planting filled in with crayons or gay colored pictures from the seed catalogs. This will enable the little folks to visualize their plantings in advance.

In selecting varieties for the junior gardens, a few important considerations should be kept in mind. If it is at all possible, have the youngster select vegetables or flowers that are not grown in the large family plot. This will prevent a feeling of unfair competition when the crop is harvested. For example, if Junior plants three or four hills of corn in comparison to Dad's large planting, at harvest time the yield from the large planting will so over-shadow the half dozen ears that are picked from the small planting that the eager glowing thrill of gardening appreciation will be lost for the child. Where the same kinds of vegetables are planted in both gardens, the selection of different varieties can be made for the junior garden; as, yellow beans in one, green in the other; green-leafed chard in one, and red in the other.

Now a word about the garden itself. Childrens' gardens will not be successful, nor will their interest be maintained if a leftover corner of the lot, the space under the lilac bush, or the area in the shade of the garage is assigned to them. Give the kids half a chance with a favorable piece of ground out in the open, the kind you would select for growing your own prize winners.

It is usually a good plan to let the youngster spend a few days alone in the soil preparation work. This will give him an opportunity to do a little exploring and also to get acquainted with a few worms, bugs, and other animals that live in the soil. This exploring work usually results in a head of hair and a pair of shoes that have

enough soil in them to plant a hill of potatoes, but don't worry too much about that.

When digging enthusiasm begins to wander or to weaken, it is time to step in and lend a hand. With his supervision, make a good job of preparing the seedbed. Here's where your ability to teach will show itself. Although gardening has an inherent power to hold interest, it will be up to you to make a rather commonplace gardening activity, such as spading, an interesting adventure. Here's where your knowledge of the soil factors can help to make this phase fascinating and exciting. Perhaps a reference to the huge sea which covered this area at one time, or a short story of how our soils were made by the immense glaciers which ground and pulverized rock and other materials into soil, will help to make clear how this thing called dirt was transformed into soil.

Every effort should be made to have the gardening program show new aspects of itself, to prompt new questions, in a word—to change. It will be up to you to develop a spontaneous interest by being alive and ready to use and apply the contagion of your own example—not forgetting that the object of teaching a child is to **ENABLE HIM TO GET ALONG WITHOUT HIS TEACHER.**

While carrying on the soil preparation program, try to impress upon the mind of the child the importance of a deep, well prepared seedbed. A properly prepared seedbed is very important because children are impatient and want to see quick results. A good seedbed will speed up germination and help to satisfy a youngster who plants one day and can't wait to finish his breakfast the next morning to inspect his plot for green developments. Don't be surprised if many a seed is sacrificed by little fingers which poke them out of the soil to find out why they

are so slow in popping out.

This, of course, is all part of the stimulating and grand hobby of gardening. And the attitude of the parent at this stage of the game must be one of an extremely interested onlooker—one who does not touch Junior's garden without permission any more than he may touch yours.

Perhaps the finest crops harvested from a youngster's garden the first year will be his enthusiasm—the fun, the lightness, and the good fellowship that goes along with all Nature study. In addition, it will awaken in the mind of the child the effects of the laws of compensation, which emphasize that in the natural order of things, of which he is a part, nothing can be obtained without a fair exchange. An honest approach to the study of Nature will present to every young American an opportunity to develop a mental attitude of self reliance and re-direct him to that forgotten virtue of thrift. In so doing, no time will be wasted in chasing a rainbow security, which ends in a pot of controlled thought, word, and action.

Therefore, if it is at all possible, give your children, or your neighbors' children a chance to garden. Years from now the boy and the girl who gardened at your side will demonstrate to you, and to their own satisfaction, how worthwhile it was to grow up, at least partly, on the soil.

Be generous with your praise. Remember, everyone likes to hear nice things about himself—you like it, I like it, and the youngsters love it! It is said that "the hand that rocks the cradle is the hand that rules the world"—and, as the hands which rock the cradle are the ones, which in most cases will guide the youngsters down Nature's trail, may I suggest to the men gardeners: try praising your wife . . . even if it does frighten her at first.

NEW IN THE LIBRARY

On Hydroponics—Soilless Growth of Plants

GROWING plants without soil, a laboratory dream of several years, might today still be a threat to change our whole flower production industry. This important art is growing plants in nutrient solutions without soil. The scientist will want this book, and the commercial horticulturist, and as a hobby so will the interested amateur.

Carleton Ellis began producing cuttings by placing easy plants like Coleus, Geraniums, and the like in moist sand, allowing these to form roots. At that time the character of the soil used for potting was the important question. A heavy black earth was considered necessary. "Imagine my surprise", the author writes in the Forword, "when I saw similar plants growing vigorously in cinders, taken from old furnaces".

The authors are two of the leading scientists influencing this rather new art. Purdue University, an institution preeminent in agricultural and horticultural research, is Dr. Swaney's ALMA MATER. Carleton Ellis, since his earliest youth, has been interested in scientific horticulture and

is the founder of the Ellis Laboratory at Montclair, N. J.

The authors claim that growing plants in chemical plant food dissolved in water possesses many advantages over soil methods of producing plants. Diseases should not occur in this new method, drouth does affect the plants, and establishments can operate in places where soil is unfit for growing plants. It might be a real promise for the commercial grower for much of the drudgery is cut down in the preparation and replacement of soils. This method also keeps experiments under exact control.

We do not look for this kind of gardening to take the place of the outdoor cultivation of home gardens; as a common dirt gardener the writer would be very sorry if it ever did.

The fact of raising plants with no soil should not be too stirring, since the roots of plants which we ourselves grow are capable of absorbing and assimilating only food that is in solution; that is, dissolved in water; so it should not matter whether the soil or the gardener furnishes the food.

QUESTIONS AND ANSWERS

I do not seem to know much about vines. When spring came last year my Virginia Creeper was about gone. I have no gutters, would that mean anything? Omaha.

Virginia Creeper is one of our hardiest climbers, but no vine should be planted where water drips on it. One writer says, "this is bad for the foliage but worse still for the plant in winter. Much winter killing is caused by the drip of water on warm days which coats the plant with ice

at sundown." The ice coated vine swaying in the wind suffers many cracks and wounds which provide means for the ready entrance of pests and the loss of stem juices in the spring.

In planting seeds this spring should I broadcast or plant in rows? Longmont.

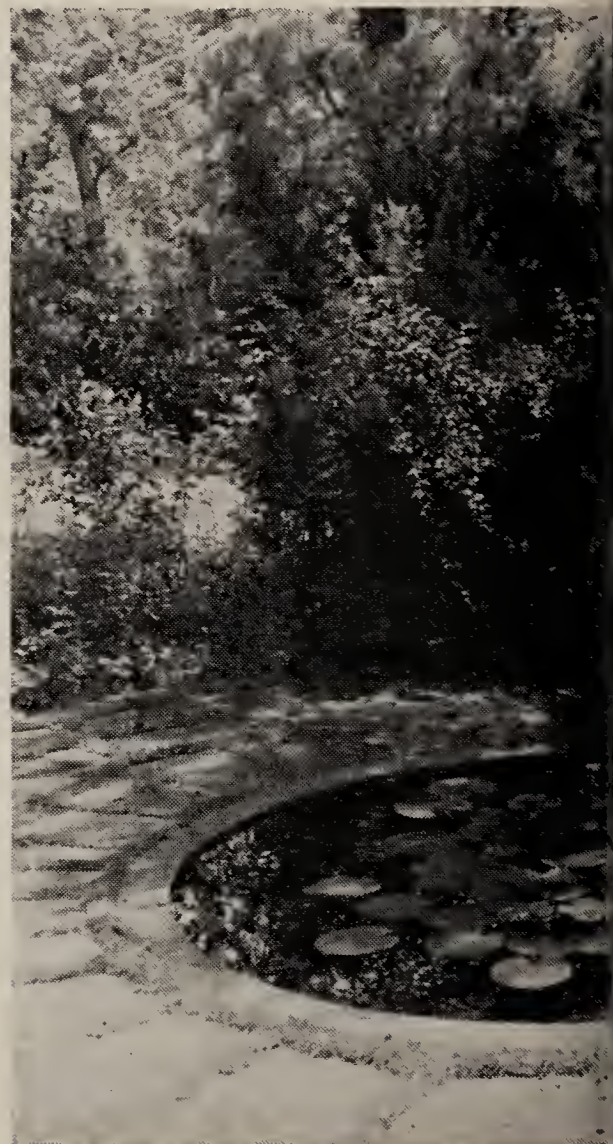
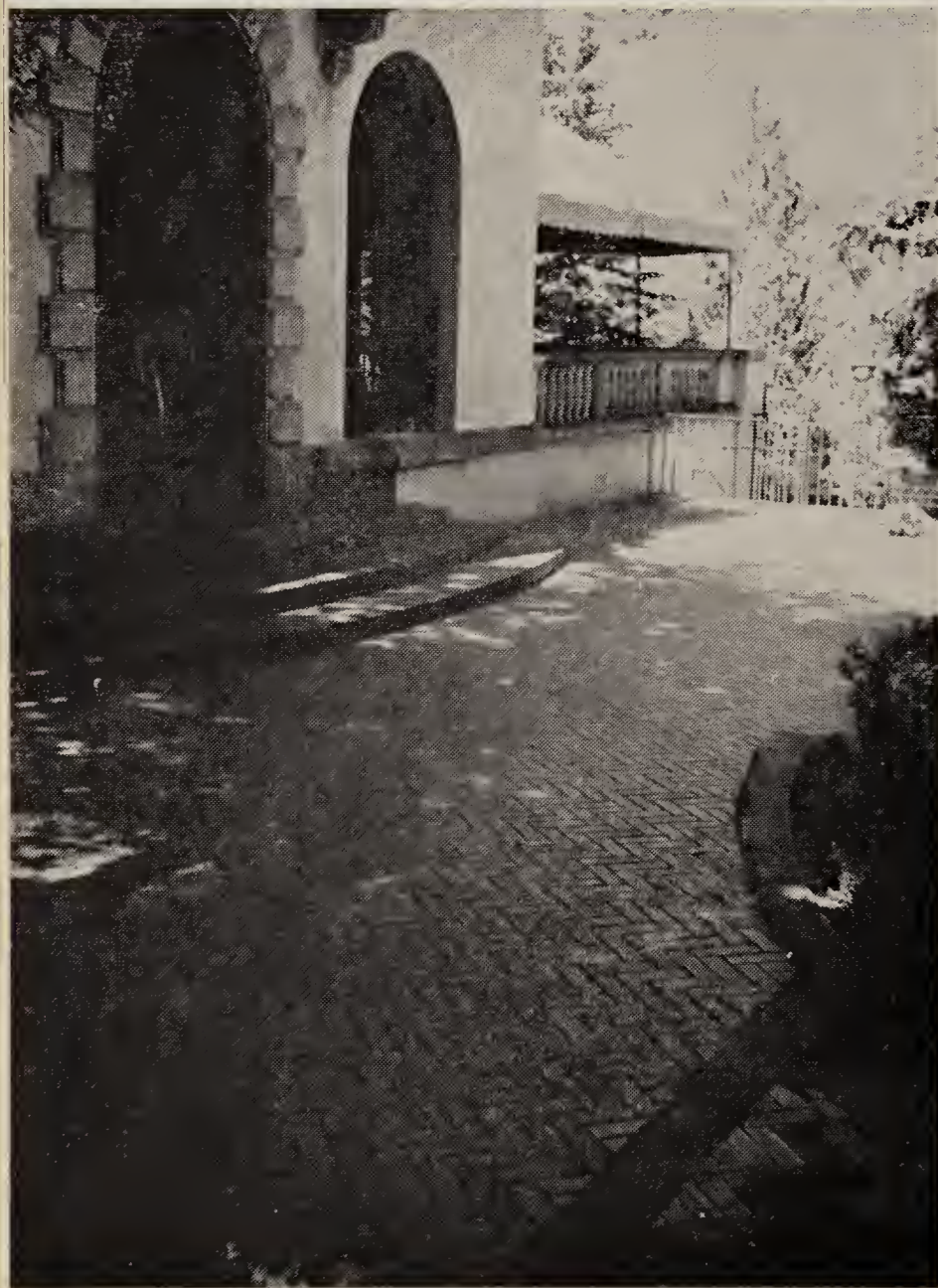
Plant the seeds in rows rather than broadcast, as it makes them easier to identify when weeding.

GROUND COVER BE LAWN (R

THE accompanying pictures from many places show that design does not necessarily have to call for all ground areas to be covered with green growing plants. One of the great glories of Denver is her parks and private places is her lawns, yet many satisfactory effects can be had by the appropriate use of inanimate materials.

The round pool shown surrounded with broken flagstones adds a bit of interest in the garden of Mrs. G. Berger, at 124 Lafayette St., Denver.

The two views on the left and the picture on the front cover are from the home grounds of Mr. and Mrs. John Evans at 2001 E. Alameda. Here also are large expanses of lawn, but these three views show the effective use of gravel, flagstone and

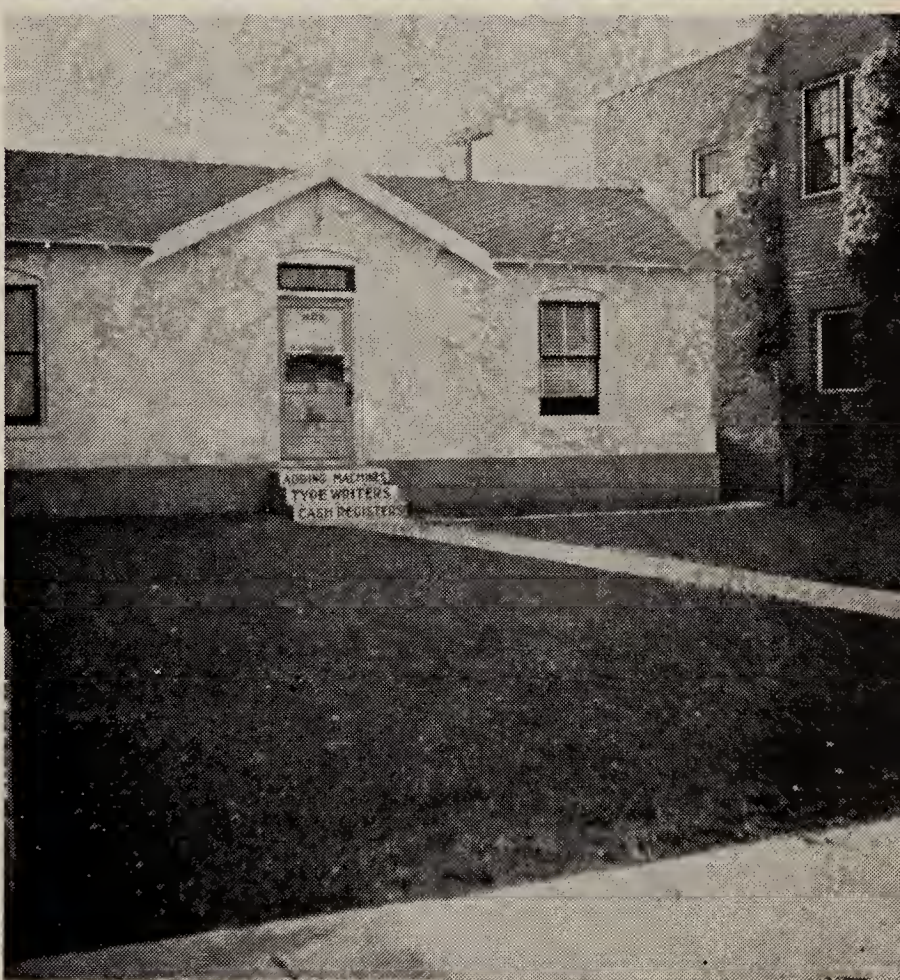


ED NOT ALWAYS VEN PLANTS

lick as substitutes for lawn in appropriate places.

The three pictures on the right show the use of iris on terraces at the Henry Swan home; rocks and gravel at the Harry Huffman place and a commercial place in Alamosa which is the front "lawn" area of red crushed or burnt clay.

Many years ago the Spanish developed the type of Landscape Architecture which used more pavement and water and less grass. Our climate is in many ways very similar to the Spanish and we are now beginning to use more of the inanimate ground covers. When well designed and carefully constructed these features add much to the general effect and they may save considerable water and time.



COMPOST FOR BETTER LAWNS

BY MARTIN R. KEUL

AS given at the panel discussion conducted at the Fourth Rocky Mountain Horticultural Conference, Jan. 2, 1951.

Our objective is to be successful gardeners and successful in home ground beautification. The making and using of compost is one of the means—one of the keys—to successful gardening and home ground beautification.

Denver is growing by leaps and bounds, which means more new gardens and lawns. This, in turn, means that good organic fertilizer from farm and dairy, at a reasonable price, for our gardens and lawns, will be hard to get. To maintain the desired level of organic matter in our garden soil and lawns, compels us therefore to resort to the making of compost.

Compost is a term applied to a mixture of rich loose, friable, decomposed plant material; soil and other ingredients, which supplies the garden soil and lawn with humus and plant food elements in safe convenient form.

Compost piles are best started in autumn, at which time much discarded plant material is available. The pile should be built in a handy, secluded spot screened in by vines or shrubs. The size of the pile depends on the available space and material. The material for the pile should consist of healthy discarded plant material from the vegetable and flower garden; also vegetable residue from the kitchen; leaves from trees, shrubs and bushes; lawn clippings, free from crabgrass seed; remnants of sod; manure, if available and some commercial fertilizer.

In a trench about a foot deep, four to five feet wide, and as long as necessary to accommodate available mate-

rial, spread a six inch layer of waste vegetable matter. On this layer spread a little manure and soil. Then the layer is thoroughly soaked. In this manner the pile is built up with succeeding layers, until the pile, with its upper sides leaning slightly inward, is about four feet high, with a slight depression on top to catch rain and snow. To hasten the decomposing of the pile and also to reinforce and increase its plant food value, sprinkle each layer, as you build the pile, with a complete balanced commercial fertilizer. For every hundred pounds of material this might be 3 pounds sulphate of ammonia and 1½ pounds super phosphate. Potash is not usually necessary in this area.

Keep the pile moist at all times. Spading over or vertical slicing and repiling the heap by working the exposed material to the center of the pile will also hasten uniform decomposition. The time required for a complete decomposing of the pile may be 6 to 12 months, depending on the attention the breakdown of the pile is given.

Besides being a plant food, compost adds humus to the soil, helps retain moisture in sandy soil and makes heavy soil more pliable. It may also be used as a mulch around shrubs and in summer gardens to retain moisture and to prevent baking of the soil. In the spring, screened compost mixed with an additional 2 pounds of commercial fertilizer for each hundred square feet of lawn may be used for lawn feeding by either broadcasting by hand or using a cart spreader. In fall the screened compost may be mixed with grass seed for reseeding the lawn and thus avoid the wasting of seed.

COMPOST IN THREE MONTHS

BY CLIFFORD L. DUNLAP

THERE are many methods of making compost. The time involved varies from a few weeks to a year or more, depending upon the material used and the work involved. The more work put on preparation the sooner you may have compost.

The three months method is very popular among gardeners of an acre or less. By this method the heap is built to a height of about five feet and can be as long and wide as needed. I use concrete blocks to make the pen, spacing them about two inches apart for air circulation.

The heap is laid on the ground, first a layer of refuse from the garden, leaves, grass cuttings, etc., of about six inches depth, then two inches of fresh manure covered with half an inch of rich earth. On this sprinkle a little household lime or ground phosphate rock. Repeat this process until the heap is finished.

Air holes should be made in the heap about two feet apart each way. This can be done by building the heap around posts or anything that will make a hole about 3 or 4 inches in diameter. Remove the posts when the heap is completed.

The material used to build the heap

should be thoroughly sprinkled so as to be moist but not soggy. The heap will heat to a temperature of 150 to 160 degrees. After a few days steam will be noted coming from the air holes.

At the end of five weeks the heap should be turned, taking care to work the sides of the old heap to the middle of the new heap, providing the same sort of air holes and sprinkling as necessary to keep it moist. The heap will heat again.

After three weeks repeat the turning of the heap. No air holes are needed this time. The pen of concrete blocks is now torn down and rebuilt with the blocks setting close together. Keep the heap moist, cover with two inches of earth and at the end of four weeks the heap will be compost.

In lieu of manure, any one of several organic activators; B.C.A. ACCO, Activo, to mention a few, may be used, provided some green material is used in building the heap. The lime or organic activators will keep rats and mice from the heap.

Ed. note. We do not believe that the addition of lime is necessary or desirable in this Rocky Mountain area.

HOW WE MAKE COMPOST

By JOHN W. NEWMAN

IN MY garden I use compost in a ratio of about five or six tons per acre. That is not a large amount, but it is about all I can collect material for. I believe a well made compost, if properly used will solve most of the garden problems which confront us during the season. If the soil contains plenty of well decayed

organic matter, it will grow most of the plants adapted to this region, provided, of course, the weeds are taken care of and water is supplied as needed.

In the spring, before the soil is prepared for planting, the compost is placed on the ground in a line where the immediate row is to be

planted. Then using a rotary tiller, I till the compost into the top four inches of soil making a bed four inches deep by sixteen inches wide for planting. And believe me, things grow!

It may be of interest to some gardeners if I state how I build my compost bins. The size of the bin to be used is 8'x12' (inside measure) and is 5' high. It is constructed of cement blocks 8"x8"x16" loosely laid with-

out mortar so that they may be moved to other locations as needed.

Material is placed in the bin in layers following the Indor method as nearly as conditions permit. With my garden it takes most of the season to fill the bin. Material for two or three layers is all that can be collected at one time. Where possible I sow winter rye in the fall and till it into the soil the next spring as soon as the ground can be worked.

WHAT DOES PEATMOSS DO TO GARDEN SOIL

BY GEORGE W. KELLY

IN the list of soil conditioners, including manure, leafmold, compost and the chemical fertilizers, we are hearing more and more about the value of using peat, or peatmoss, as it is also called.

Peat is an accumulation of organic matter usually found in old lake beds or swamps. This material has been "pickled" in its own juices much like sauerkraut. It has a great ability to absorb and hold water but it does not decay in the same way that leafmold or manure might. It is the first stage of what might, with ages of time and weight of overlying stratas, become coal. It is definitely organic material, yet has little chemical value as it does not break down and decay as does other organic material. Its chief value lies in its ability to loosen up heavy soil and make a sandy soil more retentative of water. It makes a soil "friable" or easy to work when it is thoroughly mixed with the soil.

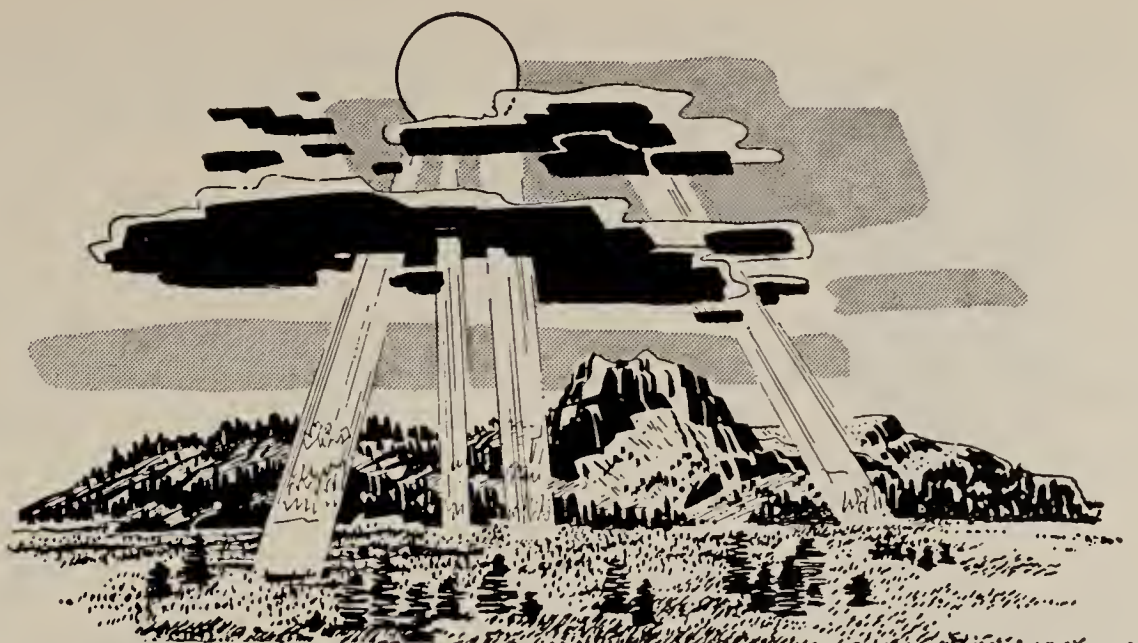
Manure, compost or leafmold will also loosen up a heavy soil and increase the humus content and these materials will also supply some chemical value. The chief objection to their use is the fact that it is seldom possible to govern their quality and

they may be too rich to use around newly planted things, they may be full of weed seed or they may be so adulterated with sand, sawdust or soil that they are of little value.

Peat used "as is" is safe to use mixed with the soil up to 30% and as a mulch on the surface can be used in almost any quantity with no danger of burning roots or stems. Frequently it is mixed with manure to add to its chemical value. When this is done it is less safe to use in quantity, gives some risk of weed infestation, but does give more fertilizing value.

Producers of peat for horticultural use make various claims for the usefulness of their brand of peat. Some may be more water absorbent than that from other sources, some may contain a larger proportion of soil and there may be a slight difference in the acidity or chemical value, but in this country of little soil moisture and little average humus in the soil, any kind of peat is beneficial.

Use peat for improving the texture of soil and use it as a mulch to hold in moisture and retard weed growth. No other material is so useful, valuable and safe for horticultural use.



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Although long known to garden authorities, the amazing soil-conditioning properties of Sphagnum Peat Moss are only now being generally recognized. It seems too good to be true that a product so low in cost can accomplish so much! Peat Moss improves the moisture-holding capacity of sandy soils; makes stiff clay soils light and friable; retains fertilizers longer; aerates the soil; protects tender plants against cold; and performs scores of other garden functions.

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New Books Received at the Library During February

Economic Plants by Ernest Elwood Stanford

New Riches from the Soil by Wheeler McMillen.

Garden Clinic by Laurence Blair.

Complete Guide to Soilless Gardening by Wm. F. Gericke.

Flower Encyclopedia and Gardener's Guide by Albert E. Wilkinson.

Country Life in America as Lived by Ten Presidents of the United States by Edward Townsend Booth.

First Book of Stones by M. B. McCormack. Illustrated by M. K. Scott.

Poet and His Time by Ernst Wiechert.

Memoirs of a Rose Man by J. Horace McFarland.

My Camera in the National Parks by Ansel Adams.

Guide to the Turtles of Colorado by Hugo G. Rodeck. A University of Colorado Museum Leaflet.

How To See Plants by Eric Fitch Daglish.

Surgery with a Spade by A. Z. Godunov.

Wood Study Kit and Manual by Research Laboratory, Timber Engineering Co.

Art of Wrapping Gifts by Drucella Lowrie.

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Questions and Answers

HOW is hardy flax increased and what soil does it prefer? Silverton, Colo.

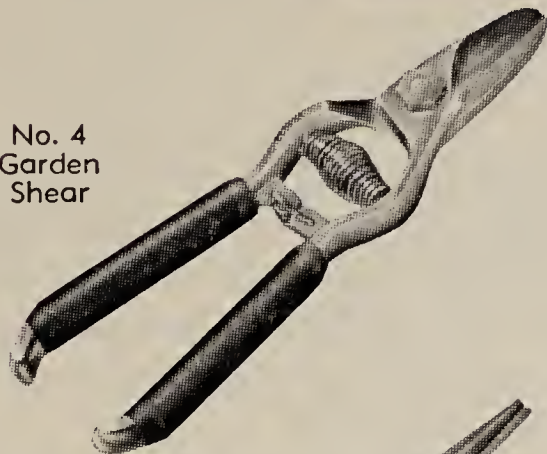
Hardy flax (Linum) is increased by division in the spring, by cuttings of the young shoots or by sowing seed from March to May. It likes a rich soil but is not particular, provided it is not stiff nor damp. It must have a hot, dry place.

I have a pond on my new place but do not know what plants I should use near it. Let me know what to plant. Casper, Wyoming.

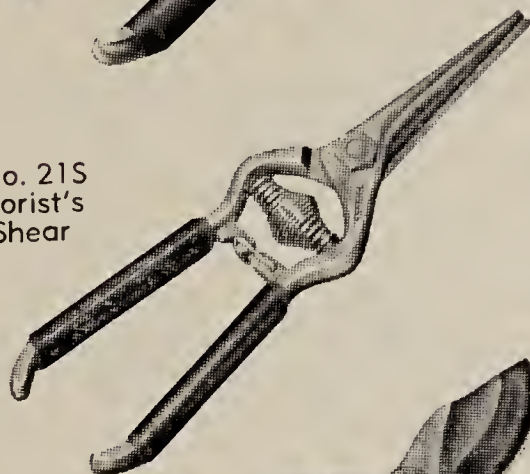
A few plants to grow are Anchusa myosotidiflora, Trollius, Ornamental grasses tall and dwarf, Hemerocallis, white Physostegia, Oenothera missouriensis, Iris, especially I. siberica, I. ochroleuca, Chrysanthemum uliginosum, Achillea, Eupatorium purpureum, Epimedium macranthum and Agrostemma.

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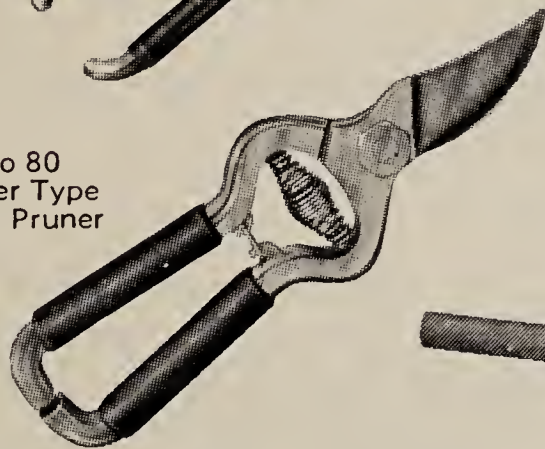
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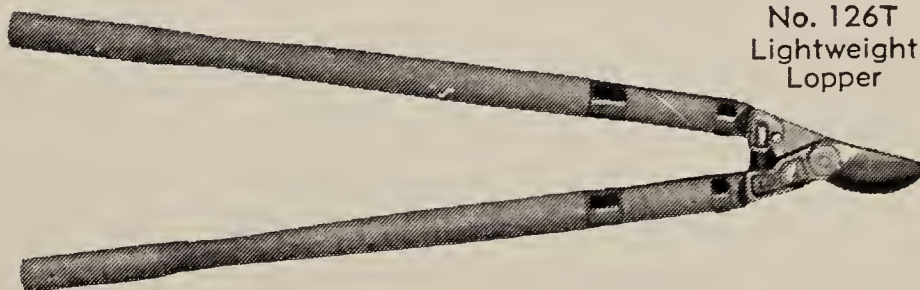
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ASSOCIATION DIRECTOR DIES SUDDENLY

COLONEL Allen Steele Peck, 644 Josephine St., Rocky Mountain regional forester, U. S. Forest Service from 1920-43, died the evening of Feb. 4 while attending a lecture with his wife at the Denver University Student Union Building. Stricken with a heart attack, he was pronounced dead upon arrival of the police surgeon.

Colonel Peck was born at West Barre, New York, April 17, 1880. A graduate of Union College, Schenectady, New York, and the School of Forestry of the University of Michigan, he started his forestry career as a student assistant on a survey party in the state of Maine in 1902. He had twenty-two months of service overseas in World War I, first as a Major with the 20th Forestry Engineers and later as Lieutenant Colonel. He was awarded the Distinguished Service Medal, and also was presented with the Legion of Honor Cross by the French Government.

Returning from overseas, he was assigned to the position of Regional Forester at Denver and served continuously in that position for twenty-four years. During this period of service, Colonel Peck had an important part both in the development of national forest conservation policy and in the advancement of professional forestry standards in America.

He was a past president of the Colorado Engineering Council and Denver Boy Scouts Council, a former director of the Colorado Mountain Club, a member of the regional and national executive council of Boy Scouts and executive council of the Society of American Foresters, a member of the Society of American

Military Engineers, Sons of American Revolution, Sigma Phi Society, University Club of Denver, Army and Navy Club of Washington, D. C., Denver Planning Commission and Mile High Club of Denver, American Society of the French Legion of Honor, Director of the Colorado Forestry and Horticulture Association, and Vice-president of the American Forestry Association.

Colonel Peck had been a director and chairman of the Forest Management Committee of this Association for several years and had recently been quite active in arranging bills to be presented to the legislature to better control the cutting of Christmas trees on private land, in reorganizing the state's agricultural department, and in controlling spraying operations in the state.

The directors and officers of this association who worked with him will all miss his help and his cheerful, friendly presence, and will fill the vacancy he left on the board with regret.

Our advertisements benefit in several ways; they help pay the cost of publishing this magazine, they help the advertisers interest prospective customers and they help all gardeners select the better firms to supply their gardening needs.

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Do you have plant management problems in your lawn, garden, or even in your window garden? If so, you will be interested in a course being offered by the University of Denver on its Civic Center Campus during April and May. Dr. Moras L. Shubert, who will instruct, says that this class in General Horticulture will be a condensation of his highly popular day class which is offered at the University Park Campus.

This course will deal with the important principles of plant propagation, planting, soil care, pruning and training, pest control, etc. Emphasis will be placed upon solving the plant problems that perplex the home owner in order that he will know what to do or where to get technical assistance.

Classes will meet for two hours each Wednesday evening and they may be taken either for college credit (two quarter hours) or for non-credit. Registration for those who want credit is on March 28 and 29. Those who do not want credit may register at the first class meeting on April 4 at 8:00 in the evening. If further information is desired, telephone the Adult Education office, Alpine 3441, or Horticulture House.

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MICHAELMAS DAISIES

DR. John Long of Denver tells of an aster regarded as perhaps the best hardy plant produced in the last quarter century.

A reader asks to tell him something about this group of plants. It would help if the inquirer were more specific as there is so much to be told of this fine perennial. In many gardens it is poorly regarded, thought of as simply a weed and supplemented by plants not nearly its equal; the Chrysanthemum does not take its place nor does any other late-blooming tall plant. None has the special style of the fall aster. It does best in a deeply-cultivated soil in a damp position.

Michaelmas Daisies are really swamp plants so it might be guessed that a heavy loam or clay is the best of all soils for these plants. If only a light dry soil is available, heavy manuring will help to hold that moisture we talk about and to keep the roots from becoming dry in summer. Nothing, done later, can save Michaelmas Daisies for fall beauty if plants are not kept reasonably wet all summer, right up to blooming time.

The true Michaelmas Daisy is *Aster tradescanti* from North America. We were not smart enough to hybridize our own plants but England was, using our own American stock to give us what we have today. The garden varieties include several species with many colors and sizes—Mrs. Wright, Mrs. Raynor, Harrington's pink with a silver sheen blooming from late August to frost. There is nothing finer than Climax blue and C. white, which, like few asters, do well in shade.

For spring planting you might think over Beechwood Challenger, Violetta, probably the deepest and the

richest of the blues, with a habit all its own. A good white has not yet been found for the sun but for a white effect *Pyrethrum Uliginosum* might be planted or a white *Boltonia*.

The Aster which has been in the Dr. Long garden for several years is *Aster Frikarti*, WONDER of STAFFA, a lavender-blue with large blooms, flowering over a longer period perhaps than any other hardy plant. From June 1st way into November, with no frosts, it is in constant display. It was perfection itself in the Dr. Long garden two years ago.

Various plants are offered from time to time as yellow asters: No true Aster is ever yellow as far as known.

HELEN FOWLER.

HELP ESTABLISH KODACHROME LIBRARY

Will all those who take kodachrome pictures look over their collection and see if they have duplicates or other good pictures of horticultural subjects which they might like to contribute to our kodachrome collection at Horticulture House. Pictures of trees, shrubs, perennials, wild flowers, good landscape design, attractive gardens and construction details will be useful. We are having more and more calls for collections of slides to illustrate garden talks. Contact Earl Sinnamon or bring in the Horticulture House. Thank you.

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THE FLANNEL MULLEIN

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AS you ride or walk along roads in the mountains or plains in the winter there will often be seen the last year's stems of this very common weed (*Verbascum thapsus*). Some times they are head-tall and may be branched to look much like a miniature Saguaro Cactus. Unless one is familiar with their habits the rosettes of green flannel-like leaves found in the same vicinity may not be recognized as the small plants of this same weed which are ready to develop the

tall seed stalk next summer. This is a biennial plant and so starts these small seedlings in the fall which winter over, produce seed in fall, and die.

The plant is a native of Asia and was introduced to the United States many years ago from Europe. It is now well distributed over much of this country. As it is a biennial it is not a serious pest of cultivated fields but establishes itself along roadways and deserted pastures where there is not too much competition from other plants.

It has been called by a long list of common names, "Flannel-leaf" and "Jacob's staff" being the favorites. Others include such as Velvet-leaf, Torches, Hedge-taper, Colt's ear, Candlewicks, Cow's lungwort, Hare's beard, Shepherd's club, Peter's staff, Old man's Flannel and many variations of these.

Some of the older folks can remember when it was considered as a valuable medicinal plant and many children earned a little extra money collecting and drying the flowers for their medicinal use. Its supposed benefits were the cure of dandruff, heart trouble, asthma, rheumatism and to preserve hair color. Farm boys felt grown up when they smoked it like tobacco.

This is a foreigner which we welcome, even though it is much of a vagabond, for it asks nothing of us but to occupy space not used by other plants, and it contributes to the interest and beauty of the landscape for those who are on the lookout for beauty.

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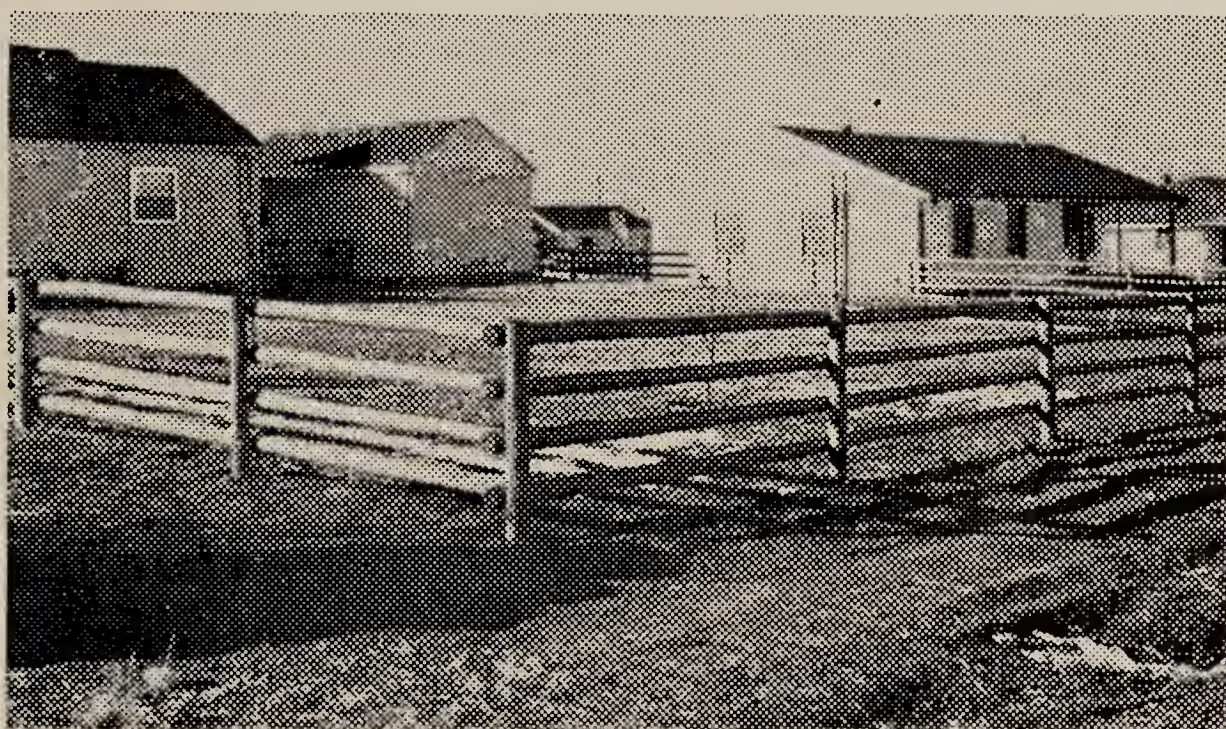
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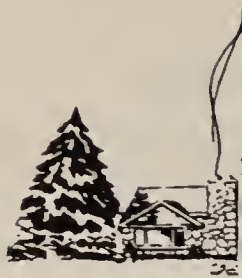
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MARCH GARDENING

BY now all your gardening plans for the season should be made, your seeds and nursery stock ordered and, as the weather permits, some of the woody plants can be transplanted. Any nursery stock can be moved as the soil is suitable to work, with the exception of some of the more particular and slow growing things like Birch, Hawthorn, Honeylocust, Hackberry and Hard Maple. These things will usually "take" better when moved just before they break into leaf. Then there is less chance of their roots drying out before they start new growth.

Watering should be no problem now as usually there is plenty moisture coming as natural rain. Cultivation, mulching and weed control has hardly started yet so all attention can be given to planting. When those warm days hit that give all good gardeners the urge to get out and dig there can usually be a lot of cleaning up done. The rubbish and trash that has blown in over winter can be removed, some trimming of broken limbs can be done and dead perennial tops removed. Do not assume that spring is here when the first warm days come. Leave the protection and covering on tender things until the new growth really starts. There will be spells of winter yet.

Dormant sprays are becoming more and more important. Miscible oil sprays for oystershell scale on Ash, Lilac, Dogwood, Cotoneaster and Aspen; for European Elm scale on Elm; for Cottony maple scale on Maple, Elm, Honeylocust, Linden and many other things. Lime-sulphur sprays for all evergreens, to control Spruce-gall aphid red spider and other insects. These should be applied when the temperature is well above 40 and there is not too much wind. Dormant sprays means that they are to be applied before new growth.

You may want to bring out the tuberous begonias now and start them in flats or pots so that they will have a head start when the weather is really settled. Many gardeners like to start some of their annual plants even though they can buy them cheaper. It is a little early to start such things as Zinnias and Tomatoes, but the beds or flats can be made now and filled with good soil ready to go when the time is suitable. Hardy things can often be put out the first of May and tender things the first of June. Figure about 6 weeks before this to seed the fast growing things indoors.

Check the stored bulbs carefully now, especially the dahlias. If they are shrivelled add a little moisture but keep them as cool as possible to avoid premature sprouting. Glads should be treated with DDT for thrips before planting out.

Look around now for the first flowers in the mountains and gardens; Spring Beauty, Oregongrape, Whiskbroom Parsley and Storksbill may be found on warm south slopes following a week of warm weather. The early bulbs around town will give a little color. The early trailing phlox may be in bloom. Note these early things and arrange to get some for your garden next year. These first spots of color and new life mean so much to us in the promise of the new year of growth to come.



April, 1951

The Green Thumb

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The Green Thumb

Vol. 8

APRIL, 1951

No. 4

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GEORGE W. KELLY.....Editor MRS. HELEN FOWLER.....Librarian
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April Schedule

April 8. Sunday. Scouting the Cedar Breaks area north of Limon, proposed site of a state park. Leave Horticulture House 8 a. m. Some early flowers may be out. George Kelly, Leader.

April 12. Thursday evening, 8 p. m. Denver Rose Society meeting at Horticulture House. "Control of Insects" by R. V. Seaman. Movies.

April 19. Thursday evening, Horticulture House. "Ten Thousand Wasted Front Yards." By George W. Kelly, Illustrated with Sketches by Ed Wallace. Is your front yard wasted? Would you like to get more use and pleasure out of that little patch in front of your home? George Kelly says there are at least 10,000 wasted front yards in Denver, and on Thursday, April 19, at Horticulture House, he is going to tell us what can be done about it. He promises a chalk talk with illustrations, to help us get away from that blank expression out front. Program starts at eight o'clock sharp; Horticulture House will open at seven-thirty.

April 22. Sunday. Trip to Beaver Brook Trail and Silver Cedar Botanical Reserve to repair trail and label plants along it. Leave Horticulture House 8 a. m. Dr. E. H. Brunquist, Leader.

May 3. Thursday evening, 8 p. m., Horticulture House. "Busyman's Garden." Busyman could be almost any one of us these days, and who wouldn't like to know how to have a happy garden with a minimum of effort. Mr. M. Walter Pesman will come to Horticulture House on Thursday, May 3 at eight p. m. to tell us how to achieve that happy situation. He will have suggestions for things we can do now, and things we can plan for the future to insure our gardens against becoming more work than relaxation.

May 5-6. Saturday and Sunday. Archeological exploration in vicinity of Walsenberg. Phone for particulars. Anna Timm, Leader.

May 13. Sunday. Joint trip with Colorado Mountain Club to Silver Cedar Botanical Reserve and Beaver Brook Trail. Dr. E. H. Brunquist, Leader.

May 26-31. Saturday to Thursday. Scouting trip into Dinosaur National Monument. Some by jeep and some by backpack. A wonderful wild country. Register as soon as possible. Led by George W. Kelly.

Listen to the Green Thumb program on KOA—8 a.m. Saturdays.



MOSSES AND LICHENS

HELEN MARSH ZEINER

MOSSES and lichens are so commonplace that we have all seen them many times, yet how often we pass them by not knowing what they are nor realizing that they have any importance. Although we are prone to link mosses and lichens together, they are really very different and unrelated plants. They are frequently found growing together, which probably accounts for our tendency to treat them as a unit.

Lichens

Lichens are among the most interesting plants in the world, for although they assume definite and characteristic growth forms, each lichen is in actuality a composite plant composed of a filamentous fungus and a

simple one-celled green or blue-green alga. (Figure.) It is one of the intriguing mysteries of nature that these two plants, each so different from the other, should grow together in consistent and recognizable forms instead of the hodge-podge of intermingled cells one might expect from such an arrangement. Indeed, the forms are so consistent that species are recognizable, and the binomial system of nomenclature is applied to lichens in the same way that it is applied to other members of the great plant kingdom.

This peculiar situation of an alga and a fungus growing intimately together is a partnership of nature, in which each member contributes something to the partnership and in turn

derives benefit from it. This association of mutual advantage is known as symbiosis. In the lichen, the algal partner has chlorophyll and manufactures food; the fungus, lacking chlorophyll, cannot make food but it absorbs and retains moisture for the partnership. Thus there is an exchange of food and moisture to which each contributes and from which each benefits.

Lichens are truly pioneers in plant succession, the process by which bare areas become populated with plants. Because of their great powers of survival, these hardy little invaders are able to establish themselves and grow, albeit slowly, on bare rock. When there is plenty of moisture and conditions of growth are favorable, the lichens grow and reproduce themselves. When conditions are adverse, they remain dormant but alive, ready to resume growth when conditions are suitable. As they grow, they build up a substratum upon which other plants may take root, and the story of succession moves on.

Lichens are classified into three groups on the basis of form: crustose, foliose, and fruticose.

Crustose forms are the true pioneers, for they are the ones which form crust-like growths on soil, trees, or bare rocks. The rocks, over a very long period of time, are broken down by chemical and mechanical actions of the lichens growing upon them. The lichen bodies together with the disintegrated rock, make a substratum upon which other lichens, mosses, or seed plants may gain a foothold and grow. Many of the brilliant colors which we see as we drive along rocky stretches of road in the mountains are due to crustose lichens. The lovely soft greens and grays, the bright oranges, the coal blacks, may be crustose lichens on the surface of the rock. The time to see these at their best is

just after a rain when they have absorbed water and are plump and fresh.

Foliose lichens are leaf-like in form, consisting of one or more flat lobes attached to the substrate by strands of the fungus. Many of these forms are gray in color and appear quite inconspicuous while dormant, but after they have received moisture they freshen and take on a bright green color, making them truly lovely to see.

Fruticose lichens are erect or pendent. Some of our most showy lichens belong here. The familiar delicate green "old man's beard" or "deer moss" which we find hanging from trees in the mountains is a good example of a fruticose lichen and is not a moss at all as many of us suppose it to be.



A. alga, B. fungus

Lichens reproduce in various ways, the simplest being that pieces break from the parent plant and develop into new plants. Most lichens reproduce vegetatively by the formation of minute bud-like outgrowths known as soredia, each composed of one or more algal cells surrounded by strands of the fungus. The soredia which may appear as dust on the surface of the lichen are so tiny that they can be blown to a new location and there establish residence. In addition to these two methods, the individual components of the lichen may reproduce independently. We have probably all seen lichens with cup-shaped structures on the upper surface, often brilliantly colored; these were the fruiting bodies of the fungus. The algae reproduce independently by simple cell division.

Lichens are useful as well as ornamental. Their great importance in soil formation should never be underestimated, for although slow and inconspicuous, it is a vital process.

The idea of eating lichens may not appeal to us, but they are of considerable importance as food for reindeer and other stock, and are used in some parts of the world as a part of the human diet. Reindeer moss, an arctic form which grows as tall as twelve inches, is an important food for reindeer. Other large lichens are also a source of food for reindeer and other animals. A lichen known as rock tripe in the northern countries has been eaten by hungry travelers. A rock lichen which occurs in China and Japan is considered a great delicacy. On the barren plains of western Asia and northern Africa there are found certain lichens which have been used for human food, and which are of special interest because they are believed by some to be the manna of the Israelites. They are called "bread of

heaven" because they may be carried considerable distances by the wind.

The ancients used many lichens in the treatment of diseases. One species which is called dog lichen was used in treating hydrophobia, and another, lungwort, was used to treat lung diseases. Today we recommend seeing your physician.

Lichens have been used in tanning, and as a substitute for hops in brewing.

Several lichens have been used in dyeing, since the fungi may contain brilliant pigment. Orchil, a purple dye formerly used to dye silks and woollens, was derived from lichens. A purified extract of orchil serves as a stain for microscopic preparations. Litmus, the famous indicator for acidity or alkalinity, is derived from the same lichens.

(The story of mosses will follow in a later issue.)

PLANS FOR THE AUCTION OF "ANTIQUES AND HOR- RIBLES" SHAPING UP

On Saturday, May 19th the parking lot in the rear of Horticulture House will again, we hope, be filled with wonderful bargains in all sorts of fantastic and beautiful household goods. John Swingle, as auctioneer, guarantees a day of laughs and surprises.

Please start collecting your donations right now. Mark the date on your calendar!

GET CASH FOR BACK ISSUES

A few issues of the Green Thumb are becoming scarce. They are needed for completing the files of Libraries and Colleges. We will pay 50c each for copies of the following issues: April, May, July, September 1944; January 1946; January, March 1947; January 1950.

NO CURE-ALL FOR PLANT TROUBLES

Reprinted from The Shade Tree Digest as presented by Swingle Tree Surgery Company

WITH the coming of Spring every dealer in garden seeds and horticultural supplies will carry on his shelves an imposing array of new insecticides and fungicides. The pest-destructive prowess of these materials will be described in such glowing terms that the prospective purchaser may be impelled to believe that his troubles with pests will be over if he only sprinkles a little of the dusts or sprays over his plants as fancy dictates. Unfortunately, control of insects and diseases is not that simple.

While it is true that some of the new materials—DDT, parathion and others—are effective against many plant pests that hitherto were classed as being extremely difficult to control, many of these chemicals are so toxic to man and animal that extreme caution must be observed in their use, and all are more or less specific in action, that is, each may kill one or a dozen different kinds of pests but is non-toxic to others. Moreover, some are injurious to certain species of plants. Furthermore, for success in the use of nearly any of these chemicals, the application must be timed to coincide with the stage of greatest susceptibility in the life cycle of the plant pests. For example, fungicides generally are preventives rather than cures, and usually are ineffective after a plant has become infected. Some of the new insecticides are so toxic to predatory insects but non-toxic to other insects equally injurious, that the population of the latter increases tremendously and severe damage to host plants results.

It all sums up to this: **NONE OF THE NEW CHEMICALS IS A CURE-ALL.** As in the case of the older and better known insecticides and fungicides, they are effective if

used properly. This requires knowledge of the pest to be controlled, knowledge of the susceptibility of the host plant to the chemicals involved, and skill in the application of the pesticidal material.

Conservation Is Everybody's Business

From the Conservation Foundation

Americans, more Americans every day, are wondering—"Is our day of limitless resources about over?" Questions arise—"What about 40 million Americans facing real trouble with water supply?" . . . "Why should lumber prices have increased more than twice as fast as general commodity prices?" . . . "Are we really threatened with other great 'dust bowls'?"

The conservationist can reply—"You have plenty of reason to worry, it's later than you think!"

Neither the questions nor the answer are explicit enough regarding a situation that does indeed lie at the heart of the present and future well-being of our country. Every activity—whether it's business or jobs or colleges or hospitals—depends upon whether we have continued flow of natural resources. So does the health of our people. Other nations which failed to do the conservation job have either gone into eclipse, or met with starvation, or have disappeared.

As for the world in general—growing populations, diminishing natural resources, each contributing to social and political tensions, are now part of our responsibility. Today conservation is everybody's business.

Listen to the Green Thumb program
on KOA—8 a.m. Saturdays.

A GARDEN WITH INDIVIDUALITY

BY JOAN PARRY

THE green grass front gardens and tree-lined streets, which are the hallmark of Denver, create a real problem for the keen gardener. How can the front yard be planned so that it bears the individual mark of its owner and still conform well with its neighbors?

Mrs. Haggart's garden on Circle Drive is a fine example of this achievement. The straight path that leads centrally from the sidewalk to the front door is flanked on either side with lawn. And on the far side of each stretch of grass is a hedge running parallel with the path. On the one side the hedge screens the garage from the garden, and on the other shelters a little enclosed garden of lawn and a long peony border.

The front garden is thus partly open to the side walk and partly private. It presents a most attractive green facade of grass and trees to the passerby, and yet retains privacy for its owner. And it does more than that. By showing the individuality of its owner it gives a fair guess that the back garden is equally unusual.

From the peony-bordered and hedged garden an archway leads round the side of the house to the

larger garden beyond, and this too carries out the same pleasing balanced proportion. A larger unbroken stretch of grass gives a feeling of space; and beyond, a small formal rose garden a feeling of intimacy.

This formal rose garden, edged with Lodense Privet, is beautifully designed. And at one end of this miniature garden is the most attractive tool shed imaginable—a white-boarded miniature house; rose garden and tool shed in perfect proportion the one to the other, a small house and garden within the larger garden.

CONSERVATION NEWS AND VIEWS

from The Land News, Columbus, Ohio

As our nation faces up against the greatest crisis of its existence, every effort should be made to *maintain the fertility of our topsoil*. Otherwise, we lose in the long drawn out war ahead. This means that no glittering offers be made to plow up land that ought to be kept in grass.

Let's not lose our hard-won gains in conservation.

There is a limit to the future we can spend today in natural resources.

Before it is too late, this nation must aggressively undertake and expand its resource restoration and conservation programs. And contrary to prevalent Washington philosophy, this is not all dam building, nor all subsidy payments. It must deal objectively in basic restoration of soil, water, land and forest resources.

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AN OFFICIAL NAME FOR EACH PLANT

M. WALTER PESMAN

IF you place a nursery order for "Gold-on-the-carpet", what do you expect to get? It is another name for Feverfew, and Feverfew is the most common name for *Chrysanthemum parthenium*, a strong-smelling, leafy perennial, usually grown as a bedding plant, with golden foliage and bunches of small flowerheads.

But an older name for this *Chrysanthemum parthenium* is either *Matricaria capensis* or *Matricaria eximia*, and that throws it with the camomiles, a plant that was at one time used for groundcover instead of grass.

Have you lost interest in names by this time? It won't do you any good, because in gardening names will catch up with you,—or trip you,—at some time or other. We simply must find a way so that we are all thinking of the same plant when a certain name is given.

S.P.N., short for Standardized Plant Names, is the standby for many of us. It is a "Listing of Approved Names of Plants" prepared for the American Joint Committee on Horticultural Nomenclature. And its red binding is decorating all bookcases of people who do try to help along in lessening the confusion of plant names.

All you do in consulting it is to turn to the name you know and you'll find after it the accepted common name and botanical name. For instance: under Noseburn you find *Tragia*, under Catchbirdtree you find *Pisonia*, under Champion, *Lychnis*, under Skunkbush, *Rhus trilobata*.

Of course, there may be some names you may not like, but all in all, S.P.N. does give us a much-needed support. For the first time nurserymen, foresters, ornamental growers,

and landscape architects have a definite checklist to follow. The latest edition, of 1942, has adopted the International Rules of Botanical Nomenclature; and that is of great help.

Now, if only we could get the botanists to follow suit and get together on botanical names. Linnaeus, the great Swedish botanist (1707-1778) started out right by adopting the two-name system for all plants then known: one generic name, such as *Ulmus*, *Rhus* and *Helianthus*, followed by the specific name, such as *campestris*, *glabra* and *annuus*, showing which particular kind of elm, sumac, or sunflower was meant.

The fact that Linnaeus himself did not stick to his father's name (which was Nils Ingemarson), but adopted the great linden tree, which grew on the family acres, as his godfather,—that fact does not detract from his insistence that a plant henceforth be known by one name only, the name first given it by the botanist describing it through accepted channels.

One of the main difficulties among botanists is that they are in danger of becoming "lumpers" or "splitters". Rydberg was a typical splitter, who loved to create new species and even genera, sometimes confusing us by unheard-of names for such common plants as dogwood (*Svidia*), yellow currant (*Chrysobotrya*), and rock-spirea of *Holodiscus*, which he called *Sericotheca*. His naming scared many of us so much that we overlooked the very fine work he did in describing native plants.

"Lumpers" go to the other extreme, in gathering under one name a large number of plants that really are quite unlike each other. Now we can only hope for a movement to bring them

all together in an effort to arrive at a truly international and carefully-considered plant listing.

Such an effort was made at the Seventh International Botanical Congress which convened July 12 in Stockholm. The attendance was 1250 members from all countries interested in botanical problems, including the USSR, Israel, and Indonesia.

A list of generic names to be adopted for retention had been prepared, but even that was not accepted, though discussed for 3½ hours.

How to name horticultural varieties? A special committee was appointed, consisting of representatives from the United States, Great Britain, New Zealand, Sweden, Switzerland and Holland. This committee has already worked out general rules for naming, some of which have been adopted by the Congress, others to be submitted at the next Congress in Paris in 1954.

In the meantime there will be an International Horticultural Congress in London in 1952, and the same general rules will be submitted there to prevent two different lines of action. So it seems that we'll gradually arrive at one international system, at least on botanical names.

So far, little has been actually accomplished in agreement. It is still all right to use either capitals or lower case letters for species names, i.o.w. either *Primula Parryi* or *Primula parryi* will be acceptable. Dropping the double i, as S.P.N. has done (as in *Phlox Drummondii*) was too much for the conservative botanists, and the Congress decided to allow ii anywhere or else to use the original spelling.

In other words, so far the result has been mainly negative; but, at least, there is an effort made to get together, and that is more than the past has produced. The mills of the scientists grind slowly.

Where does all this leave us for common names? I am afraid that Little Johnny and his mother are apt to use a catchy name for a striking flower, such as "Bunny-in-the-grass" and "Fairy-slipper",—no matter how many botanists call them Western Figwort (*Scrophularia occidentalis*) and just Calypso (*Calypso bulbosa*). People's imagination is always active, and if an appropriate name suddenly appears,—nobody knows from where at times,—it is sure to be adopted.

On the other, it is foolish to continue the use of a name,—like Red-root,—that may mean one of a dozen plants; it is misleading to call a mock-orange "syringa," since that name has been given to a lilac, or to talk about a "Silver Maple" when a White Poplar is meant.

It all comes down to this that it is safest to use both the botanical (Latin) name and the current common (English) name, if you want to be sure to avoid a mistake. It's hardly likely that authorities might disagree about both at the same time. In common usage, good, meaningful common names are sure to continue: avoid them only if and when they might lead to misunderstanding.

More and more people in America use S.P.N. as their guide; even though a name has been more or less arbitrarily selected, it is better to agree on it than to have one plant go by a dozen names, or to apply one name to a dozen plants. Whether or not you string a number of words together in one breath-taking whole, such as Douglasfir and Flowerofan-hour (*Hibiscus trionum*), is of less importance.

This article would not be complete if it did not pass on a few of the most interesting stories connected with plant names.

Spruce was originally *pruce*, for Prussia,—a Prussian tree. The s was

added for emphasis, as for instance in "splash," which was "plash" to begin with.

Dandelion was *Dent de lion* in French,—lion's tooth, for its leaves.

Rhubarb is from the Greek *Rheon barbaron*, the *Rheon* (or *Volga*) plant from the barbarous country.

Stonecrop or *Sedum* is so named because it grows on stones and walls,—a crop from stones; English people plant it on their slate roofs, and call it sometimes "Welcome-home-husband-how-ever-so-drunk."

Washingtonia, *Jeffersonia*, *Franklinia*, *Lewisia*, *Clarkia*, *Linnaea*, and *Rydbergia* have all been named after well-known people.

Spinach is derived from *Hispania*, Spain, called *Hispinach* by Arabs.

Sycamore has suffered from mistaken identity from 'way back. Its name comes from Greek and Latin: *sukon*, fig, and *moron*, mulberry, both with similar leaves. In England it stands for the sycamore-leaved maple, in America for the Planetree.

An interesting thing happened to

the *Swamp Sunflower* in its travels. Having been baptized *Helianthus angustifolius* in our northern states, it was grown in European nurseries, then sent back to an American nurseryman who was unable to read the original label and catalogued it as *Helianthus questifolius*.

Similar was the fate of our *Kinnickinnick*, *Arctospaphylos uva-ursa*, (both first and last name means Bear-berry). Collectors corrupted the "uva-ursa" in such a way that they called it the "universe vine" or "uversy".

Leave it to the English to bring foreign names down to earth. Where else could *Epimedium* change to "Happy Medium?" "Lizzie Mack" is certainly easier to remember than *Lysimachia*, and "Traitor's Cancer" nicely replaces the *Spiderwort*, originally named after John Tradescant, the 17th century naturalist.

But is it right to carry on the idea of a "rose by any other name" to the extent of applying "Gruesome Triplets" to the dependable red rose that greeted Teplitz?

TRUE MOUNTAINMAHOGANY

Cercocarpus montanus

ONE of the very interesting sights on dry hillsides in the mountains in winter is the sun shining on the fuzzy twisted fruits of the mountain-mahogany. While we refer to these fruits as resembling pipe cleaners twisted into a corkscrew, actually the corkscrew and pipe cleaners are a very modern thing compared to these interesting fruits.

At various times through the winter these fruits loosen on their stem and the wind will carry them off. Then is when their peculiar construction comes in handy, for the fuzzy hairs make them light and easily carried by the wind, then when the wind

drops them their spiral construction allows them to twist down through the leaves or grass and deposit the seed (which of course is always on the lower end) on the surface of the soil.

The Mountain mahogany grows on the dry, sunny hillsides, often in company with the Wax currant and some other native shrubs. It is in nature a rather loose, scraggly shrub, but under cultivation becomes rather dense and attractive.

The name probably comes from the fact that the inner wood or roots assume a mahogany like color with age, as it has no botanical relationship with the real mahogany.



THE NOT SO "MINOR" BULBS

by CLAIRE NORTON

All drawings by Claire Norton

WHEN we turn the calendar to April, we know, in Colorado, that once again the garden is stirring into life. And when we find in some sheltered nook the flaunting bubble of a crocus, or an early squill, or even that venturesome tulip, *Tulipa kaufmanniana*, we are assured the round of color and beauty for which we have been waiting is at hand.

The so-called "minor" bulbs usher in the spring for any gardener so fortunate as to have captured for his garden these gay sprites. Just why they are called "minor" when they are so important to the early garden, I have never been able to determine, nor yet why we gardeners put off from year to year buying them in quantity. Their initial cost is small, and there is no expenditure for upkeep. Given a spot where they can settle in happily, their little colonies increase in size, year after year. Perhaps it is because we do not know

these flowers from bulbs so well as tulips and daffodils, and in the fall when we should be getting them underground, we are thinking of other things.

Snowdrops are among the first to show and may bloom as early as January some years. Old-fashioned they are but ever a delightful surprise to find when thoughts of gardening are



Waterlily Tulip, *Tulipa kaufmanniana*



Grape Hyacinths, *Muscari armeniacum*



Guinea-hen flower, *Fritillaria meleagris*



Spring snowflakes, *Leucojum vernum*



Snowdrops, *Galanthus*



A group of *Narcissus* species—Hooped Petticoat, *N. bulbocodium*; Jonquil, *N. jonquilla*; Angels' Tears, *N. triandrus*; *N. cyclamineus*; *N. minimus*.

but lazily rousing. Most gardeners have known since childhood the white bells of *Galanthus nivalis*, almost twice as large is the later blooming *G. elwesii*, and there is a double variety, *G. nivalis flore pleno*.

Less familiar, but sometimes met with in Colorado gardens, are the snowflakes. *Leucojum vernum*, the spring snowflake, is earliest to bloom, eight inches high, white with green tipped petals. The summer snowflake, *L. aestivum*, blooms in May or early June, is taller and yellow tipped.

The dwarf squill, *Scilla sibirica*, can always be counted on to produce its lovely deep blue by the time the crocuses are beginning to stretch upward their chalice blooms. It will probably still be making a gay note of color when the daffodils open their buds.

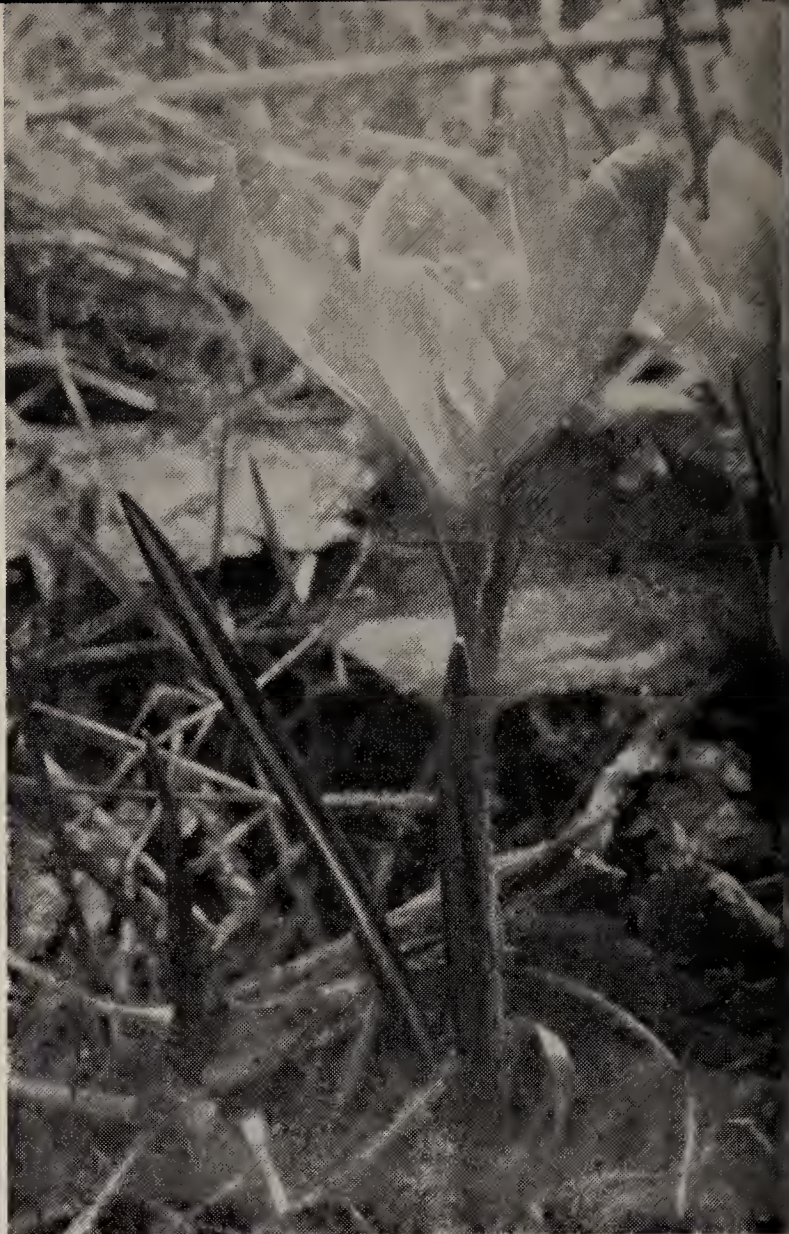
Nestled against a rock, a colony of these squills is inspiring. By May, the taller, more robust squills, known variously as wood hyacinths and English blue bells, will be around. These grow up to as much as fifteen inches in height and come in shades and tones of blue, of white, and of pink. Bulb catalogs list many named varieties of *Scilla campanulata*, or *hispanica*, and sometimes of *S. nutans*.

Grape hyacinths like Colorado as well as do we gardeners, especially the one sold as *Muscari armeniacum*, or Early Giant. Putting up its foliage in the fall, it is ready to burst into bloom with the first real sign of spring, displaying its cobalt bells along sturdy stems often a foot tall. And next year there are a dozen where one bulb was planted. There are many, many more grape hyacinth species and varieties, with Heavenly Blue heading the list as familiar to the garden-minded public. The Feather hyacinth, a *Muscari* with narrow petals forming a plume-like spike, is one to try for something different in the spring garden.

Chionodoxa, glory-of-the-snow, and *Eranthis*, winter aconite, are two "minor" bulbs with which I have not had much luck. For some reason they always disappear after a season or so, though listed as perfectly hardy. Spring starflower, *Tritelia*, is another that has failed me, but it might do with protection. That little iris, *I.*

reticulata, also wants a very protected spot, and does not like what March can sometimes do to it here.

The guinea-hen flower, *Fritillaria meleagris*, is both hardy and quaint. We should have some of this around just to bring a smile when things are not going quite right with spring garden work. And Virginia bluebells, *Mertensia virginica*, listed with the bulbs—how can any garden be without its beauty when daffodils and tulips and trilliums bloom? It is a choice addition to the shade border.



Trillium



Squills

Crocuses have an appealing way about them, whether they are the rather opulent Dutch or the fragile, ethereal wild species obtainable from bulb specialists. Never should they be planted in twos or threes here and there. They show to advantage only in large groups or informal drifts of their own kind.

The daffodil or Narcissus tribe has some small members that should be considered among the not so "minor" bulbs. The hybridizers have been at work on the *Triandrus* and *Cyclamineus* groups to give us some de-



Photos by Mark Norton

calornicum



lightful new varieties. Then there are the true jonquils together with their hybrids, and those quaintest of all flowers that come from bulbs, the hoop petticoat daffodils. These latter are not as easy to grow, making their foliage in autumn and liking especially dry summer conditions. *Minimus*, *minor*, *nanus*, *cernuus*, *juncifolius*, *tenuior* are other names for which to watch in the bulb catalogs.

For the gardener who wants something different in tulips, the Botanical or Species tulips offer a wide field.



Virginia bluebells, Mertensia

Water-lily tulip, *Tulipa kaufmanniana*, is strictly reliable, early blooming and lovely. Little lady or candystick tulip, *T. clusiana*, is very choice but prefers a sheltered spot with winter protection for safety. *T. sylvestris* is sweetly fragrant and blooms in late April and early May. There are others to be found in bulb lists and are worthy of trial.

Trilliums should not be passed lightly by, particularly if the garden has any shade to offer. For at least partial shade and a deep rich loam is their preference. The Eastern white



Pussy ears, Calochortus lilicina

wood lily, *T. grandiflorum*, is most generally offered, and is beautiful. One of the best varieties we have had for Colorado gardens hails from the Pacific Coast, the *T. sessile californicum*. We grew this successfully for several years at an altitude of 9200 feet. It is the most fragrant of its family.

Another native bulb genus with a lot of merit is represented by the Erythroniums. These from the West Coast are by far the showiest, but our native Rocky Mountain snow lily, *E. parviflorum*, deserves cultivation. The Eastern *E. americanum* is sometimes met as is the harder to come by *E. albidum*.

**Our Native Colorado Erythronium
*parviflorum***

Photo by A. Haanstad



The star tulips or pussy ears *Calochortus* bloom early in the spring, and the eight-inch, fragrant lilac *C. lilacinus* proved hardy for us high into the mountains. It offers an unusual rock garden subject.

What garden can be without lilies-of-the-valley for late spring bloom? Here again we have a bulb flower that takes to partial shade. White is the common valley lily met everywhere, but the variety with bells delicately tinted pink is worth hunting. Together, a colony of these fragrant flowers along a shaded path is something to remember.

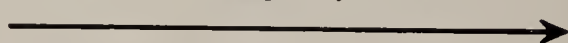
So there they are, a sample of the not so "minor" bulbs. Few of them are finicky about their diets. They thrive and bloom and increase in any good garden soil, with a minimum of care. Without exception they are planted in early fall, as soon as they can be obtained from the dealers. A light mulching spread late in December to keep the ground shaded and their foliage underground until safe in the spring will be advisable the first year. Most of them appear to become acclimated by the time a second spring rolls around and take care of themselves without even this coddling. And what dividends they pay on the money and time invested in them!

TREES

from a Report of the Bureau of Governmental Research and Services, Univ. of Washington.

Time passes quickly so what might be a little tree at one time can become an expansive giant to keep trimmed or to be cut down eventually because of right-of-way limitations, such as overhead wires, walks, and narrowness of right-of-way.

Right: Tulipa sylvestris





FUN WITH GERANIUMS

BY MERCY BERNICE NOYCE

A LARGE eastern nursery is calling the geranium, "The flower of the century." Our brief and satisfying experience agrees with that, and in addition, it is certainly a versatile and excellent plant choice for the Rocky Mountain amateur whether working indoors or outside.

Briefly then, here is the story of average Coloradoans, a stone ranch house and the genus *Pelargonium*, otherwise Storksbill (from the seed formation) commonly known as geranium.

When we built our informal home with its generous corner windows, I insisted upon wide terra cotta sills, little realizing what would develop. About that time I rescued a window box of plants from an early fall freeze. We lugged home the big pots of Fiat Enchantress from Jo Collin's place on West 10th, in Lakewood, promising to return the plants or cuttings in the spring. Boarding "Enchantress" was most rewarding, we had gorgeous long-stemmed blooms most of the winter. It was a good beginning, and by springtime I had been thoroughly bitten by the subtle "geranium bug." So far as I know,

it is the only pest connected with our plants, but it effects only the gardener and not the plants. It is a delightful malady and can be only temporarily relieved by finding some new variety.

Anyone who loves sunshine more than an unfaded rug, can successfully induce geraniums to bloom indoors with little effort. We have found the following conditions necessary.

1. Full sunlight, or at least east and south exposure.
2. Suitable soil mixture for potting.
3. Correct watering schedule.
4. Room temperature, moderate. About 72, 50-60 at night.
5. Correct feeding schedule.
6. Proper pruning.

The first condition is self-explanatory. Without an abundance of sunshine, geraniums will not bloom. Where can you find better sunshine than ours?

Potting soil should be light and well-drained. Our Lakewood soil is heavy with clay, so we use one-third garden soil that has been tilled and enriched, one-third sand or part vermiculite and the rest well-rotted manure. One-half teaspoon of super phosphate is mixed in thoroughly to each six-inch pot, less for the smaller containers.

During the indoor season (October to May 30) potted geraniums require a good soaking every second or third day, depending upon the humidity in the home. Geraniums enjoy drying out somewhat, so we water when the top is good and dry, but never permit them to stand in water.

We have fine results using "Hyponex" as a liquid feeding. One teaspoonful is dissolved into a gallon of

(Continued on Page 32)





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HAWAIIAN FLOWERS

The Colorado Forestry and Horticulture Association wishes to express its deep appreciation to Mr. and Mrs. Scott Wilmore for the fine volume of HAWAIIAN FLOWERS, presented to the Library on their return from Hawaii.

1951 PROPOSALS

We are in need of many more books on special subjects for the library. The following patrons agree to help supply these important requirements.

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The key to controlling Dutch elm disease may lie in keeping the soil alkaline. Several trees in Denver became infected with the disease. At the same time, beetles which spread the infection increased alarmingly, and conditions were right for a serious outbreak. But instead of spreading, it died out. Significantly, Denver soils are highly alkaline. On the other hand, the disease is worst in New England, where most soils are strongly acid.

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The twenty-second annual meeting of the Academy will be held at the University of Denver on April 27 and 28. All interested in the latest scientific thought will enjoy these sessions. Call Moras Shubert for details.

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Memoirs of a Rose Man

Tales from Breeze Hill

THIS is the story of how the "tail end" of a vineyard was converted into a beautiful yet simple garden of roses. He tells, intimately, of the circumstances which, early in his life, interested him in plants. He recounts the successes of Dr. Mills and Walter Van Fleet, a doctor of medicine, who also loved roses and devoted much of his talents to their culture. Down through the ages doctors have figured in the life of plants. Today, many of our skilled physicians and surgeons are better able to carry on their trying work through relaxation in a garden.

Dr. McFarland's book is humble enough in size; he had the ability in writing of the beauty of any plant, including much cleverly-concealed culture, to do it with a minimum of words.

The rose man from Breeze Hill shared his great love for climbing roses with other climbing hardy plants—wisteria, honeysuckle, clematis, ivy—and was particularly fond of flowers with fragrance, which may account for the inclusion of *Philadelphus* in his book. There is his usual frankness in his comparison of roses to people. Some, he found, great in spirit, kindly, generous and some, he wrote, "disappoint." No one was more disappointed than Dr. McFarland when any rose failed to meet the high standard necessary for acceptance and introduction.

You will be held by every word in these Breeze Hill Memoirs. Dr. McFarland's sympathetic handling of his own life has given new meaning to the rose. Before the publication of this book, Liberty H. Bailey wrote in the preface, "I am glad that a memoir of Dr. McFarland's life and work is

to appear. It will keep his influence alive. He stood for everything good." Helen Fowler.

THE PRUNING BOOK, by G. L. Wittrock of the New York Botanical Garden.

We rush out into our gardens, pruners in hand and without knowing one correct rule for shaping, preserving or even saving a shrub, we start lopping the tangled branches and assume we are pruning, not realizing that both root and top systems must be considered and kept in proper balance. Again, we must be careful not to prune shrubs about to bloom.

The PRUNING BOOK tells the full story, what to do and why, for flowering shrubs, fruit and shade trees, also evergreens and hedges. It is written by a man who ought to know. After reading it, you will have lots of fun watching a reputable, licensed tree man do the job.

HELEN FOWLER.

QUESTIONS AND ANSWERS

How are *Phlox subulata* and also *Iberis* propagated, please tell me what preference do primulas have? Denver.

Phlox subulata is increased by root division in the spring or autumn, or by cuttings in July; for *Iberis* cuttings can be taken at the end of July or early August. Seeds may be sown in March or as soon as ripe. Here in Colorado primulas prefer leafmold and sharp sand. They must have shade. In one garden in Colorado I have known primulas to succeed in the full sun but they were watered heavily every single day. They should not, however, be planted in the sun as they definitely are shade-loving plants.



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Part of Martin Keul's garden, showing grapes, raspberries, strawberries, and terrace supported by Sempervivum.

BEAUTY WITH UTILITY

BY MARTIN R. KEUL

OUR beautiful city may well be proud of its many large and attractively landscaped home grounds with their carefully planned flower, vegetable and small fruit gardens. Besides these elaborate displays of plantings, however, we also have thousands of small homes with only limited space for a garden, whose owners, nevertheless, are anxious to make their home grounds as attractive and productive as possible. To them especially, we offer a few helpful suggestions.

The home must be given the proper setting by the plant life which surrounds it, so that the entire home ground, including the garden section, forms a harmonious unit in color, neatness, arrangement and general pleasing appearance. Hence, correct planning, planting and care of the home grounds are essential. In other words, you must know what, where, when and how to plant and care for,

and why you do your work in that particular way.

Nothing beautifies the home ground more than a well kept lawn. It is the green carpet surrounding the home. A few well chosen plants placed at doorways and corners or some other strategic points are all that the average home needs to soften its lines and tie it into the landscape pictures. This is known as the foundation planting.

The intimate garden with its rock garden, lily pool, sun dial, bird bath, and inviting bench and table is the outdoor living room. Screened in by vines and shrubs, it is a place where one may relax in privacy or serve meals and entertain guests in the summertime. If not such an elaborate place of retreat, every small home owner can at least afford to have a small arbor or summer house covered with vines near the rear of the house,

where the housewife can sit outdoors while peeling potatoes, darning socks, or just relaxing.

For an effective display in the flower garden, select and group your annuals, perennials, and roses with special attention to height, color harmony and season of bloom, showing something in bloom at all seasons from early spring till late in the fall. For your vegetable garden, select varieties that rate high in food value, that the family likes, that are suitable for the available space, and that you know will grow successfully.

Arrange your plan for a spring, summer, and fall garden, planting your fall garden in the same space occupied earlier in the season by the spring garden. Work out a planting table for each month. Where space is very limited, flowers and vegetables intermingled provide a harmony of color. For example; after the cutting of asparagus has stopped, plant cosmos in the asparagus bed. Plant a few petunias in the melon and cucumber hills. Between Verbena or Phlox drummondii borders, you may plant rows of late beets and carrots for autumn display. Lettuce and parsley may also serve as borders.

Small fruits may be planted where ever there is available space. The small fruits such as strawberries, currants, grapes, etc., should find a place in the home ground plantings. Train grapevines on a trellis or fence and use fruit-bearing shrubs and vines for screens and hedges. In pruning always bear in mind giving shrubs, vines and trees a graceful appearance.

Know your soil and improve it by making and using compost. It is one of the keys to successful gardening and home ground beautification. And finally, keep your plant life in a healthy condition by proper cultivation, irrigation, fertilization, dusting, or spraying.



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ROCKY MOUNTAIN HORTICULTURE IS DIFFERENT

By GEORGE W. KELLY

Published by The Green Thumb Council, 1951.

NOT only is Rocky Mountain horticulture *different*, but so also is "George Kelly's Garden Book" on it. Incidentally, it is the *best* garden book I know of. Those who know George Kelly would expect his product to be different and best. The author is no "arm chair" horticulturist. A lifetime has been spent in preparation. So many garden books are but rehashes of those that preceded them, and written without actual, specific experience — successes and failures. George, as he is called by the thousands who know him and depend on him, is a student, a practical nurseryman of many years experience, and for the past six years, has been Horticulturist for the Colorado Forestry and Horticulture Association. He is the top authority in the country on Rocky Mountain plants. Combine those qualifications with the soul of an artist and the enthusiasm and industry of a zealot, and it is no wonder his "Garden Book" is a distinctive creation.

First of all, it is a **MUST** for every houseowner in Colorado, whether he or she be horticulturally minded or not. (And all can afford it at \$1.50.) Everyone in Colorado has a lawn, and here, for the first time, is the latest and most authoritative information on its care and the destruction of dandelions, weeds and crab grass. Everyone has trees, and at least a few shrubs. From this manual he can learn the *easy* way to maintain them and prune them. Even the housewife, who wants to know what plants she can grow on her mantle in the

living room, finds a carefully selected list of fool-proof homebodies. The book covers *everything*: "How Rocky Mountain Horticulture is Different," with analyses of our soil, water, bugs and diseases; "Planning, Planting and Pruning," all phases and full details; "Plants to Fit the (Colorado) Climate." All of them. Evergreens, deciduous trees, shrubs, perennials, annuals and even herbs. And finally, "Gardening by the Month"; what to do each month of the year.

To me, the fillers at the bottoms of pages are the most priceless of all. They are Kelly, pure and simple. In them is packed information, charm and homely philosophy.

George, Colorado citizens are forever indebted to you.

ROBERT E. MORE.

Questions and Answers

At the far end of my property I need a coarse plant. What do you suggest? Salt Lake.

Low-growing buttercup, Nepeta glechoma, if damp, some Sedum and also Sempervivum, and the Bishop's weed (Aegopodium podagraria variegatum). There are others. These named are good looking and fit.

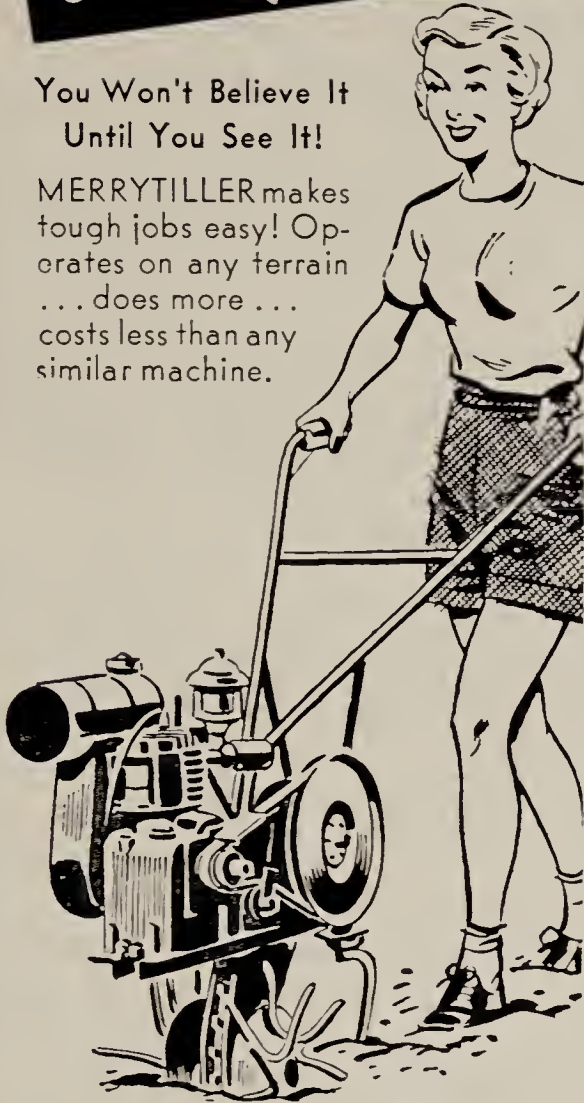
My Hollyhocks were poor last year with backs of leaves covered with spots. What is the trouble and what should I do? Albuquerque.

Your Hollyhocks are infected with the rust fungus. In the fall burn all top growth, this is foliage and stems, and in the spring apply dusting sulphur, especially to the underside of leaves. Repeat every two weeks or so.

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FUN WITH GERANIUMS

(Continued from Page 22)

tap water. More than one feeding a month may produce sappy growth, and unattractive plants with few blooms.

Properly pruned geraniums produce better blooms and are certainly more attractive in indoor pots or boxes. It sometimes seems harsh, but pinching out tops and cutting back straggly branches is a wise procedure. Every gardener seems to learn by experience that it is not best to bring in the old plants. It is far more satisfactory to take cuttings even though it may take longer to get flowers. Methods of rooting cuttings may vary. Some use wet sand or vermiculite and others root cuttings in water. We always cut just below a joint, for the roots seem to start there in either method.

Much can be said about varieties of geraniums and how to accumulate a collection. Like others, we began by trading with friends and we bought locally. After a recent pleasant visit with Mrs. Charles Kassler of Denver, we came away with a fine peppermint (*tomentosum*) nicely rooted, and generous cuttings of vari-colored Lady Pollack, Distinction, and a fragrant cut-leaf finger bowl variety. Mrs. Kassler's favorite plant is the splendid peppermint, a procumbent grower with large velvety "grape" leaves and a truly refreshing mint scent.

We prefer a variety of color and have only recently begun to collect the scented leaf types (which seldom bloom indoors) and the variegated leaf types. Ten plants from Lowstone's sills are now gayly blooming. These are most productive and we recommend the following:

Mme. Buchner—double white, compact and blooms often.

Enchantress — double salmon, large blooms, long stems.

Michell's Sensation—double soft scarlet.

Jean Pabon—double red, large flowers.

Mme. Jaulin—double apple blossom pink.

Jean Viaud—mauve rose.

Hills of Snow—green and white leaf, single red.

Suzanne—double orchid pink (very fine).

Iowa Pride (our name until correctly classified)—single pink with white eye. From Theodore and Marie Hefley, 1330 Chase, Mountair, Colo.

Charles Turner—ivy type, large pink blooms.

The scented leaf geraniums are grown for their variety and pungent odors rather than for the small blossoms they produce. Baird's of Oklahoma City, list 77 varieties in their catalog. In addition to the peppermint, we have seven plants from Carlton Villa seed including: Little Leaf Rose, Lemon, Snow Flake, Butterfly, Decipians and Cody's Fragrant. Our pine-scented geranium is an attractive plant with a fragrant conifer scent. The fine cut leaves are edged with white.

If there are those who class the geranium along with antimacassars, pot-bellied stoves and other stuffy relics of the Victorian period, let it be said that this is a versatile plant well suited to the modern functional home. It reflects its surroundings and has always seemed a cheerful sort of plant. Geraniums need not always be in clay pots. Wooden boxes and brass containers are most attractive. We pick the long stemmed blooms and arrange them in low modern arrangements, and they make stunning cor-sages.

Insects and diseases do not plague the collector of geraniums. No spraying is required. Except for white fly

which attacks the Martha Washingtons or Domesticums, there are no bugs to fight. While very beautiful, the Domesticums seldom respond to home growing conditions. We have therefore not included them.

As a hobby, nothing has ever flourished so well for us. We still collect furiously and at the point of becoming eccentric, our standard greeting these days is, "Say, have you seen our geraniums?"

This month's feature

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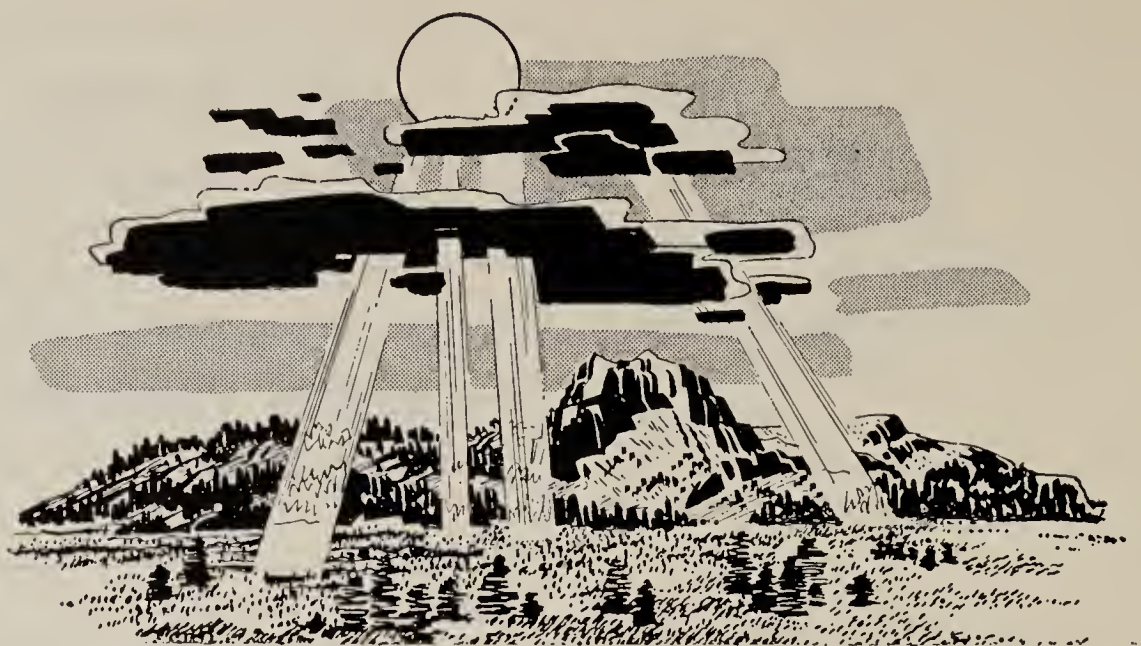
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APRIL GARDENING

DON'T let April weather fool you, for we will have storms one week and spring-like days the next. Don't uncover all the things that have been protected with earth mounds or shade until the new growth demands it, for it is this sudden changing of temperature which is so hard on tender plants.

All planting should be done this month if possible, with the exception of Birch and some other slow-growing trees. If your nurseryman handles potted or dormant stock the season can be extended into May. Perennials can be moved almost any time with attached soil.

When the fine days give you the urge to work in the garden and there does not seem to be any seasonal work, spend your time improving the soil in your garden spots. Work in peat, manure or compost, or replace very poor soil.

Some dormant spraying can still be done before the leaves appear. This is becoming more and more important. Use the miscible oil spray for control of scale on Ash, Elm, Maple, Dogwood, Lilac, Cotoneaster or other deciduous things; and lime-sulphur on evergreens to control gall aphids and spidermites.

Start examining your Junipers, Spruce and Pine weekly for indications of infestations of Aphids. Look especially at the Colorado Junipers, Colorado Spruce and Pinon Pine. It is important to get these aphids when they first appear and prevent their rapid spread. If your trees are of any considerable size they will require the high pressure equipment of the commercial sprayers.

Finish up all necessary tree trimming now. All stubs from limbs broken in last fall's storm should be carefully removed. Check especially that no broken elm limbs are left which would make ideal breeding places for the scolytus beetle. We must be continually on the alert to avoid another flare-up of this insect in our elm trees.

Leave all but emergency trimming on shrubs until after they have bloomed. Clean up the garden now and remove trash and unnecessary material but do not remove the valuable mulch from the garden or lawn. We can have neatness without removing all covering of the soil. Learn to use the bamboo rake instead of the garden rake when cleaning up.

Start now training the lawn to expect water deep in the soil instead of only in the top 2 inches. Water the lawn whenever it is dry, but water thoroughly and then let it go until it needs it again, whether this is three days or three weeks. Reseed the bare spots and fertilize if the soil is poor or worn out. Covering the bare spots in the lawn with a growth of bluegrass or humus will prevent a lot of grief from weeds in the lawn later.

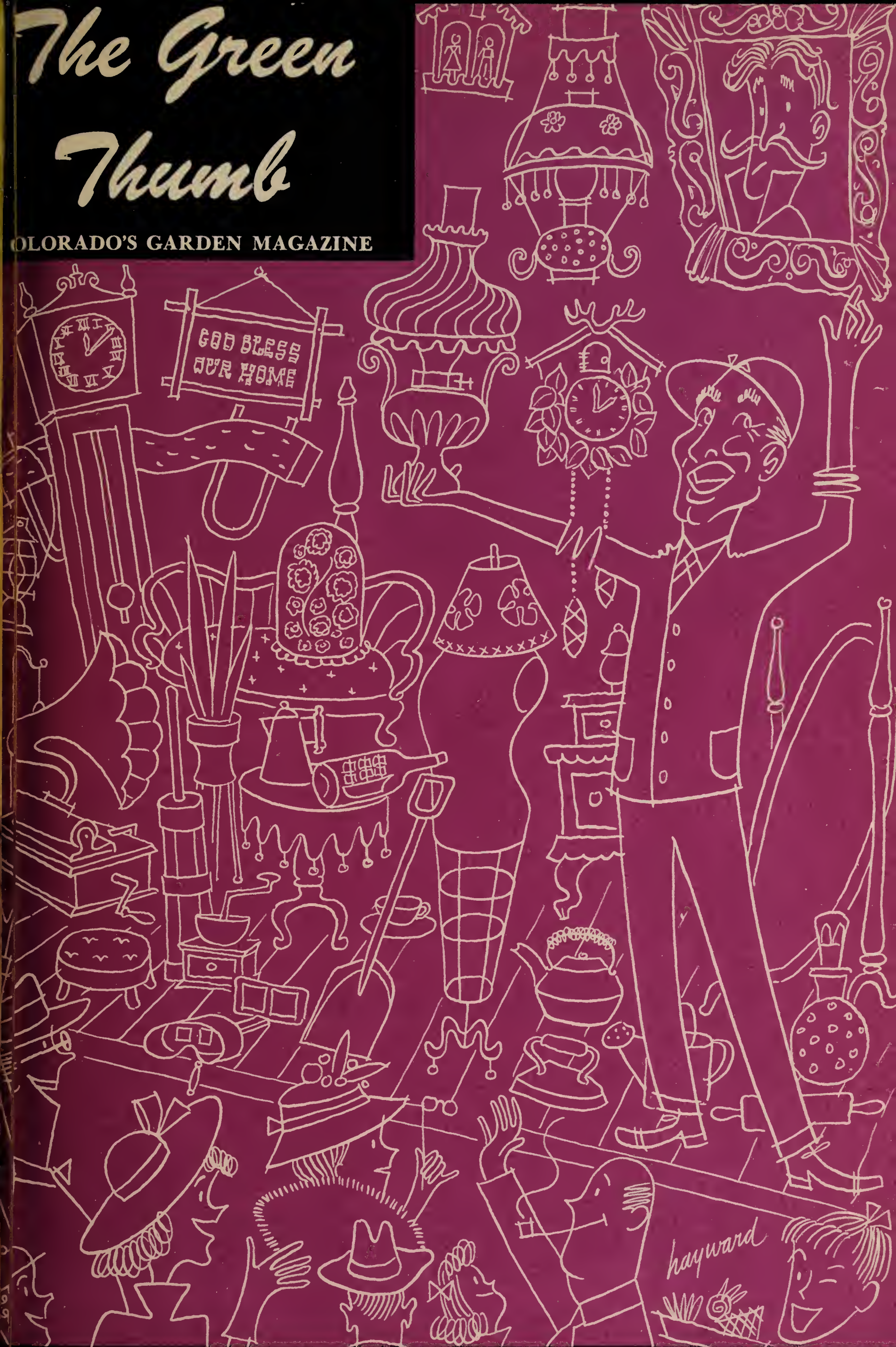
If you like to play with little plants (and what gardener does not) get a few flats of annual flowers started soon so that they will have about 6 weeks' growth when the settled weather comes, about the first of June.

Drive around and enjoy the first flowers that brighten the spring and give a foretaste of the big splurges of color to come later. Get out to the foothills some time and see the early things coming there. Soon the routine of watering and spraying and cultivating will keep you too busy to look around at other places.



The Green Thumb

COLORADO'S GARDEN MAGAZINE



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The Green Thumb

Vol. 8

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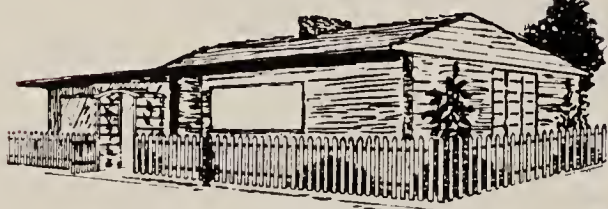
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MAY SCHEDULE

- May 3. Thursday evening, 8 p. m., Horticulture House. "Busyman's Garden." Busyman could be almost any one of us these days, and who wouldn't like to know how to have a happy garden with a minimum of effort. M. Walter Pesman will come to Horticulture House on Thursday, May 3, at eight p. m. to tell us how to achieve that happy situation. He will have suggestions for things we can do now, and things we can plan for the future to insure our gardens against becoming more work than relaxation.
- May 5-6. Saturday and Sunday. Archeological exploration in vicinity of Walsenberg. Phone for particulars. Anna Timm, Leader.
- May 13. Sunday. Joint trip with Colorado Mountain Club to Silver Cedar Botanical Reserve and Beaver Brook Trail. Dr. E. H. Brunquist, Leader.
- May 17. Thursday evening at Horticulture House. "Birds in the Garden" by Ona Scudder.
- May 20. Sunday. Wild flower trip to Allen's Park. Leave Horticulture House at 8 a. m. Leader, Sylvia Stephens.
- May 26-31. Saturday to Thursday. Scouting trip into Dinosaur National Monument. Some by jeep and some by backpack. A won-

- derful wild country. Register as soon as possible. Led by George W. Kelly.
- June 3. Sunday. Scouting trip into the Ten Mile Range near Breckenridge. Leave Horticulture House, 7:45 a. m. Leader, Eliot Moses.
- July 14-23. Backpack trip into Wilderness areas above Ashcroft. Heavy equipment sent in by horse. Camp in a different spot each night. Anna Timm, Leader. Call her, PE 5565, for further details.

BIRDS IN THE GARDEN

The birds are here again and what good gardener wouldn't like to get better acquainted with these "grace notes" of the garden? They really are as much a part of our garden as the flowers and other plants which give us so much pleasure. So we know all of you will enjoy the program planned for Thursday evening, May 17th, at Horticulture House, when Mrs. E. W. Scudder of Georgetown will share with us some of the experiences she has had with bird friends in her garden. Her bird friends are many and from her we may learn how to know and enjoy those which visit us. The program begins at 8 o'clock.

ERNE SHUBERT.

You will find Iceland Poppies a good substitute for your Tulips that are through blooming.

JUST LILACS

CLAIRE NORTON

MAYTIME brings lilactime across the length and breadth of Colorado. For the lilac is the one universal plant found wherever gardens are made in the State.

Riding horseback along a little used track out on the Eastern Colorado plains many years ago, I came upon an abandoned homestead. And there beside the debris which once was a dwelling a great rounded bush of common lilac bloomed in a thrilling and magnificent display. Up in the rocks of the Bull's Head which stands guard over 9,000 foot high Silver Plume, an old, old lilac grows. For wherever went a woman in the early days of our settlement—to the farms, to the mines, to the towns—there went a slip of a lilac bush.

No less strongly have we gardeners of later days felt about the fragrant, beautiful lilac. Every year hundreds

of new bushes are set out, and more than one town aspires to the title of "Lilac City of Colorado". But what a list of varieties, of species, of outstanding hybrids we now have from which to choose, with more and more promised on every hand.

No two gardeners will agree exactly on the "best" lilacs. In the first place, tastes vary in color, in type of floret, in the way these florets are carried in their panicles. You may not like my favorites, and again I might never want to plant yours. And one that does beautifully for you in Denver, in Colorado Springs, in Grand Junction, might not thrive at all in our garden up in the northern part of the State.

The shyest bloomer in our garden is the old fashioned lilac. Just which of the many possible forms of *Syringa vulgaris* this may be, I do not know. Only once in the past eight years has the very large bush east of the house put on a show. Its white variety does a better job, giving us some bloom every year.

Never, never has that old hybrid Charles X failed, and even when its high topped crown was bowed to the ground with late May snows, it shook its head, and though a little browning was noted on its pinky-mauve petals, it again held aloft its magnificent bouquet. Here is a thoroughly reliable lilac that should be even more widely planted than it is to date.

The origin of this early hybrid is shrouded in mystery. It seems to have been offered first in a catalog of 1831-32 as Charles dix, and 1839-40 as Lilas Charles X. In habit Charles X approaches a small tree at maturity. Young specimens bloom as precociously as the French Hybrids, but

French Hybrid Lilac, Vestale, in the Author's Garden

Photo by Chester K. Strong



with age the bouquets are held high, and nearly bare trunks show several feet above the ground. It is remarkably free from scale, not becoming infested from a nearby *Vulgaris* that supported an ample colony.

Another old-time hybrid we see a lot of in Colorado gardens, likely arrived there under the name of the Persian lilac. Most of our so-called Persians are really *S. chinensis*, or as this plant is sometimes listed, *S. rothomagensis*. It showed up long ago in the Botanic Garden at Rouen, France, and is considered a natural hybrid between *S. persica* and *S. vulgaris*. Whether or not we would like the true *S. persica* (which after all has proved to be native to China and not Persia!) as well, or if it would make the show it does in Idaho Springs each spring, is open to debate.

Where garden room is limited, the old common lilac or even its white variety does not have a place. Both sucker in a big way, and are susceptible to scale and leaf miner. The suckers that form about the feet of Charles X will probably rule out this fine lilac in many gardens. Here only should go the finest of the French Hybrids with their well-behaved characters, their gorgeous flowers, their production of bloom so quickly after planting, and their relative freedom from disease and insect pests.

And here it is that few gardeners agree on the "best". In The Green Thumb survey of December, 1944 (Vol. I, No. 7) one of our personal favorites polled few votes and received a comparatively low rating. This is Pres. Grevy, a semi-double hazy bluish-lilac with a lot of fragrant beauty and a faithful producer with us. It is an old hybrid, introduced by the Lemoines in 1886, but for its type and color it is hard to surpass. We've liked it better in our garden than the single blue Pres. Lincoln.

Lucie Baltet, another old introduction and a true pink, waited until last year to show us her true loveliness. She is never a profuse bloomer and sulked for several years in our garden.

In the way of a dark reddish purple the highly rated Marechal Foch has not lived up to its reputation with us, but the still darker Ludwig Spaeth has been completely satisfying. Last summer was the first since it came into our garden seven years ago that it failed to bloom heavily and that was undoubtedly due to the fall luring its bloom buds out of season.

Lilac-pink Katherine Havemeyer has a delightful color, but we do not like so well her crowded clusters. Leon Gambetta has a similar floret in a much more symmetrical and beautiful arrangement. Vestale is always about tops in the white hybrids, even when a young bush, but it does not attain the sheer beauty of the double white Edith Cavel, one on our list to

Dilitata Hybrid Lilac Showing Early Flowering Habit

Photo courtesy F. L. Skinner
Dropmore, Manitoba, Canada



buy this season. Alice Eastwood is another listed by us for 1951 purchase, if only for the name it commemorates, though catalog descriptions of it do sound enticing. Deep colored Monge is a third yet to be acquired, but long admired.

S. villosa and *S. josikaea* are two species lilacs grown infrequently in Colorado, both of which are hardy and bloom after the main French Hybrid season is finished. Under the name *Syringa Prestoniae* comes a group of Villosa Hybrids developed in Canada that are hardy and free-flowering, carrying something of the grace of their other parent, *S. reflexa*. Another good cross of this parentage



is the Skinner Hybrid, Hiawatha. The bush is symmetrical vase form, makes rather a slow growth, and the waxen flowers are a deep rose. Few people not familiar with the foliage of *S. villosa* recognize this as a lilac in our garden. The later blooming season of these hybrids offers some protection from late spring frost damage.

Tolerant of temperature extremes also is the race of Dilatata Hybrids developed by Mr. F. L. Skinner of Manitoba, though they bloom with or even ahead of the French Hybrids. These are crosses between the common *S. vulgaris* and the decorative



Korean species, *S. oblata* var. *dilatata*. Asessippi is one to be highly recommended, especially for Northern Colorado and mountain town gardens. It is one of the earliest to bloom, highly fragrant and very dark in coloring. Excel, a pleasing mauve-pink borne in large panicles, overlaps the French Hybrid season. Dark hued Pocahontas is yet another we have seen in a robust, vigorous bush, but have not grown.

No lilac is hard to grow as far as soil is concerned, if it is well drained, but "wet feet" all resent. Cultivation to keep down weeds and an annual winter top dressing of the soil with manure insures finer blooms. Their water requirements are about





Photo courtesy Central Experimental Farm, Ottawa, Canada

Syringa x Prestoniae, var. Isabella

average with other shrubs used in the border.

Hybrid lilacs should be purchased on their own roots, grown from cuttings, layers or suckers. To produce plants quickly for sale, growers bud the desired variety onto stock of common lilac and privet. To give satisfaction such a plant should be planted deep and protected for several winters until the grafted lilac has had opportunity to form its own roots. We have known cases where that lovely French Hybrid has in a few years "reverted" to the old *S. vulgaris*,

and some where wind has very effectively separated bush from roots at the ground level.

Fall planting is preferable to spring planting for lilacs in Colorado. By mid-October the wood is ripened and food stored away in the roots toward spring activities. The plant is in the best condition of the year for the shock attendant on any uprooting and shifting about, and we can usually count on good transplanting weather until mid-November. If roots are adequate, little or no pruning will be required. Of course, when falls are

dry, as most of them are, water must be artificially supplied the newly set shrub.

In spring, both leaf and flower buds are ready to go at an earlier date than we can, most years, conveniently plant. Even sacrifice of all flowers for the first season may not be sufficient to compensate for the shock and the plant takes several seasons to become established. In any case, the performance of a lilac should not be judged on its first or even second production. It takes a while to establish a root system to support the top, but once that is made, the gardener will have to bodily root out the plant to rid the garden of it.

Lilacs should have more room than most of us give them in our borders. It is hard to visualize the eventual stature of the small shrub we set. And thus we crowd them too close to each other and to other shrubs and trees. Under these circumstances the fine symmetrical form of which they are capable is rarely attained.

Scale, both oyster shell and San Jose, is the prime insect enemy of the common lilac and its children, the French Hybrids. Older, heavier bark

is little harmed by these unsightly pests, but new young twigs, upon which we count for each succeeding year's bloom, can be seriously damaged. Dormant spraying with lime-sulphur or oil quickly cleans out these colonies, and to be safe a nicotine-soap spray in June when the young are developing proves advisable. Lilac borer we have so far never personally met with and doubt that it offers any serious threat at this time to our Colorado lilac plantations.

But lilac leaf miner disfigures the foliage by first tunnelling the leaves, then webbing them together and eventually skeletonizing them. Heavy infestations weaken a shrub. The young larvae can be controlled by contact sprays or dusts, but as usual preventive measures save time. Dusting the ground around the bushes about the time leaf buds start to unfold with that miracle insecticide Chlordane gets most of the leaf miners as they come out of hibernation in the debris and soil below the bushes. The only disease that gives us much worry in Colorado is powdery mildew, and dusting sulphur gives good control on this.

PRIMROSES

MYRTLE ROSS DAVIS

IF YOU are looking for satisfactory plants to grow in the shady part of your garden, try primroses. They are easy to grow providing they are given partial shade, a little winter protection, a good supply of water during their growing season and are never allowed to dry out completely. They respond to a light, rich soil with plenty of humus but they will grow in almost any good garden soil. They come in a wide range of colors and have a long period of bloom. If several species are grown, they will

produce a colorful display during the spring and early summer and often again in the fall. They make excellent cut flowers for the small or low arrangement and retain their freshness for several days.

Primroses multiply rapidly and the clumps may be divided anytime after their blooming period is passed. September is probably the best time to make divisions when the weather is not so hot and dry. An excellent way to obtain new varieties and colors is to plant the fresh seed in August

or September. (Seed may also be planted in the spring but old seeds do not germinate as well as the fresh seeds.) The first winter the little seedlings need protection either in a cold frame or under an inverted jar or flower pot. Excelsior is a very good winter protection for it does not pack down too closely and smother the tiny seedlings. They must never be allowed to dry out and frost may heave them out of the soil for their roots are very shallow when they are very young.

Although Bailey lists some two hundred and there are over three hundred known species of primroses, probably the best known and most popular is *Primula polyantha*. As its name indicates, it has many flowers on a stem, and any good sized plant will produce several stems. It comes in a wide range of colors white, red, pink, lavender, peach, apricot, salmon, rose, lilac, yellow and many two-toned and bi-color variations. It also comes more rarely in blue shades.

Another species which more often produces blue shades is the Acaulus Primula or English Primrose (cowslip is *P. veris* and oxlip is *P. elatior* which are rarely seen in American gardens). It is very similar to the polyantha except each blossom is on its own separate stem and the stems are shorter. It is an early and prolific bloomer. Sometimes the plants are almost completely covered with either clear blue, pink, rose, lavender, white, red or purple blossoms. Each blossom is about the size of a half dollar. If these plants are covered with a plastic hot cap during the winter they will bloom under the snow during January, February and March.

An exceedingly hardy primula second only to polyantha in popularity is the *Auricula primula*. It enjoys an alkaline soil and is at home in the

rock garden for it comes from the mountain heights where snow and rock are its chosen habitat. It also has a wide color range and will bloom from April until June. Its flower clusters arise from neat rosettes of thick gray-green leathery leaves.

There are many other species and hybrids available for garden culture some of which are: Japonica which comes in all shades of pink; Florindae, an enormous fragrant yellow blossomed giant from Tibet which blooms in mid-summer; Sieboldi, with lovely soft crinkly foliage and fine fringed flowers; Bulleyana hybrids with whorles of yellow buff and apricot blossoms, and many others too numerous to mention and probably not very hardy in our dry climate. There are many tender species which are grown in green-houses and used by florist for pot culture.

The most striking primrose which grows in our mountains is *Primula Parryi* or Parry's primrose. It grows with its roots in the cold streams of the sub-alpine and lower alpine regions. It is almost a foot tall and bears dense clusters of brilliant rose-purple flowers. It is almost impossible to grow in lower elevations for we can not supply the cool running water that its roots enjoy in its native habitat. We should not dig it up and try to bring it home for it will not live in our hot dry alkaline soil. The same is true of the dainty little fairy primrose of the alpine regions. We should enjoy them in their native home and raise the cultivated kinds in our gardens.

While primroses may never become so popular in this country as they are in the cool moist climate of England, yet, for anyone who can provide the conditions, they are well worth growing.



Not Holland but Arvada, Colorado

SPRING BEAUTY FROM BULBS

L. J. HOLLAND

SINCE most of our earlier flowers are from bulbous type plants, it might be well to become better acquainted with this large, diversified group of plants that have endeared themselves to gardeners everywhere; not alone for their beauty, but also for their adaptability and ease of handling under average garden conditions. Some are at their best in the perennial border, giving us blossoms before the herbaceous perennials have reached their blooming stage; some seem to have been developed by Mother Nature just for rock-gardens, while others are at their best under shrubs and trees.

To the botanically inclined, there is a very distinct difference between bulbs and corms. A bulb is an encased leaf-bud, or a flower-bud, or often both, surrounded by fleshy lay-

ers or scales. Some common examples of true bulbs are Lily, Tulip and Onion. Some, Tulip and Hyacinth, for instance, have the fleshy layers wrapped tightly around them. These are known as "tunicated bulbs" because the outer layer forms a coat, or tunic; others, Lily is a good example, have the layers in the form of overlapping scales. Corms, on the other hand, are not built up from layers, but are solid throughout. Crocus and Gladiolus are two quite common cormaceous plants.

There are two other factors that tends to differentiate the two groups that are of far more importance to the gardener than above mentioned. First, a bulb may live for years as a single unit or may increase by splitting itself up, but a corm produces flowers only one year, then the old

corm withers and dies and a new corm is produced, usually atop the old one. The second factor is that the bud in a true bulb was formed while the foliage was maturing the previous season. Therefore, bulbs should receive as much attention after flowering as before. This condition does not exist with corms; here the bud, or embryo plant, is not formed until growth actually starts in the spring. The attention that these receive during their early growth largely determines the final results, it being presupposed that high quality stock was used in the first place. It is very necessary with bulbs, and highly desirable with corms, that the foliage be not removed until it has yellowed and withered of its own accord, so that as much vitality as possible be stored in the new corm or bulb. Tubers, are short congested, underground stems stored with food from which new sprouts come (a few are sometimes called "bulbs"). They are governed by practically the same growing conditions as corms. Dahlias and potatoes are good examples of tubers. Some rhizomatous plants,

such as the Bearded Iris, form the flower bud the previous season in the manner of bulbs.

The terms "Spring Bulb" and "Fall Bulb" are used by most dealers to indicate the time that they should be planted. Generally speaking, fall bulbs are hardy and may remain in the ground indefinitely, while spring bulbs must be lifted each fall and stored in a frost-free place, as one would care for *Gladiolus*.

In view of the fact that the title of this article indicates that it deals with bulbs alone, and yet probably over half of the subjects mentioned are either corms or tubers, let me say that, like most gardeners, my classification of bulbs is ordinarily as flexible as Joe Stalin's conscience.

All bulbs are at their best in a rich sandy loam of good tilth, but it is not always possible to have such condition and existing soil must be made as nearly ideal as is practical. Heavy clay or "adobe" soils may be made friable by thoroughly spading in some sort of humus. Leafmold is my first choice as a humus, but good compost is every bit as good. Well rotted

Lilies at Alamosa, Colorado



manure containing plenty of straw is also excellent, but be sure it is well rotted, because fresh manures release acids that injure the bulbs and make them susceptible to disease.

A rule of thumb for planting is to place the top of the bulb three times as deep as the greatest diameter of the bulb. Of course, in light soils the bulb may be planted deeper than in heavy soil, and it is well to do so. Since good drainage is absolutely essential, the holes for the bulbs should be deep enough in heavy soils that a few inches of sand can be placed in the bottom of the hole. Under such conditions it is best to place scaled bulbs slightly on their sides, so that moisture does not collect between the scales.

Two of the better known bulbs are Lily and Tulip, and since Lilies were quite ably discussed in a recent issue of *The Green Thumb* it will not be necessary to say more. Tulips are so well known that it seems there is little left to be said. By far the most common group of tulips are those known as Darwins, available in almost every color from white to almost black. Next in numbers are the Cottage Tulips. Although this group as a whole does not have the long stems and wide color range of the Darwins, it is especially desirable for its early bloom. The individual flowers are longer and have more pointed petals than the typical Darwin and are a "must" in any tulip planting. The least known of the "Big Three" is the Breeder group, wherein is found art shades and blending of colors not found in other tulips. Parrot, Double Early, Double Late and Rembrandt are other varieties that are well worth better acquaintance.

Daffodils, a name loosely applied to all *Narcissus*, are another well known group of bulbs. There are varieties with long trumpets, short trumpets,

doubles and multi-flowered types, all valuable for the border or naturalizing. They cut well.

Hyacinth, in my opinion, is one of the more difficult bulbs for the amateur to grow to a state of perfection. Our strong sunlight and drying winds of Spring seem not to be to their liking. Planting near a house in semi-shade helps a lot. Some gardeners advocate covering the planting with about three inches of litter or strawy manure. This is fine, providing the covering is not applied until after the ground is well frozen and not removed too early in the spring. It is an extremely rare case that Hyacinths increase from the bulbs under ordinary garden conditions. About three or four years seems to be the useful life of a bulb, they should then be dug up and replaced.

Crown Imperial, (*Fritillaria imperialis*), is not as well known as I think it should be. This is a bold plant, desirable as an accent to the lower growing bulbs, as it attains a height of about three feet. The foliage is mostly clustered at the ground level, the flowers are bell-shaped, and form a cluster at the top of a naked stem and are in turn surmounted by a whorl of smaller leaves. Crown Imperialis require deep planting in the richest of soil.

Others of this genus are: Checkered Lily (*F. meleagris*) and *F. recurva*, are low growing with solitary flowers. The latter is red outside, the inside yellow spotted with red, the former is usually reddish purple checkered with a brighter color. Both do best in semi-shade and a rather dry situation and good drainage is absolutely essential. Height about one foot.

Crocus are famed in song and story as a harbinger of Spring, but there are species even earlier than



Photo by Charles J. Ott

Calochortus Gunnisonii Mariposa Lily

the Dutch Crocus commonly grown. *C. imperati* is the first to bloom, and is buff outside and rich violet inside. *C. siberi*, a delicate blue, and *C. susianus*, (Cloth of Gold) follow in short order. Then, too, all crocus do not bloom in the spring; *C. sativus*, *C. speciosus* and *C. zonatus* are autumn-flowering types.

Calochortus, better known as Butterfly Tulips or Mariposa Lilies, are among the most beautiful of spring bulbs. Two or three are natives of Colorado and one (*C. nuttalli*) is the State-flower of Utah, although the

most beautiful are *C. luteus*, *C. vesta* and *C. venustus*. While all species are reliably hardy as far as cold is concerned, they do not stand alternate thawing and freezing, so should be well mulched after the ground is frozen. Incidentally they are cor-maceous plants.

Dutch and Spanish Iris are often injured by our dry winters, but a heavy mulch of leaves often brings them through in good style. They are well worth the trouble.

Gladiolus is probably grown to a greater extent in this locality than

any of plants mentioned in this article, some plantings cover several acres in the vicinity of Denver. However it is not a spring flower and really should have an article devoted to it entirely. Why doesn't some grower write one?

A close cousin to *Gladiolus* is the Mexican Shell Flower (or *Tigridia*, to use its botanical name), which vies with the Glad as to beauty and ease of handling. Like the Glad they bloom in summer and require the same culture, except a little more moisture is needed.

Glory of the Snow (*Chionodoxa*), Snowflake (*Leucojum*), Grape Hyacinth (*Muscari*) and Squill (*Scilla*) are all excellent subjects for the rockery as well as edging the perennial border. *Chionodoxa* and *Scilla* come in shades of blue, rose and white. *Muscari* is blue or white, and there is a plumed variety, *M. plumosus*, that blooms later. Snowflake, true to its name, is always white.

Snowdrops (*Galanthus*), Winter Aconite (*Eranthis*) and Lily of the Valley will stand more shade than most of the others. The last two are not bulbs, but are of the tuberous group. *Eranthis*, with its bright golden flowers above glossy green foliage, is hard to grow due to the fact that too often the tubers are badly dried when received. Tubers from a reliable grower and planted immediately upon receipt give good results. They bloom about two weeks ahead of the crocus and are at their best under trees, where few plants thrive. Practically all of the lesser bulbs do well under deciduous trees, providing the tree roots are not so near the surface that they rob the bulbs of food and moisture. The bulbs have had their day before the tree has foliage enough to offer too much shade.

A few points to remember: All

hardy bulbs should be planted early enough that root growth starts before the ground freezes.

A light covering of compost or well rotted manure over the bulbs in late fall allows the nutrients to leach down with the moisture from the snow. Most of the lesser bulbs should remain undisturbed for years, but Tulips and Crown Imperials should be lifted at least every third year and replanted, as both form numerous bulbils and do not tolerate too much crowding.

A poor bulb under ideal conditions or a good bulb under poor conditions cannot produce a good flower.

If the winter is dry, like this past winter, watering the bulb planting a few times will prove advantageous.

Bulbs, like other plants, will not thrive without proper care, although a minimum amount is required.

Above all, do not cut back the foliage before it is mature. If the withering foliage is objectionable, plan so that it is hidden by annuals or perennials.

FOR MAY WORK

When early bulbs such as Tulips, Daffodils and Hyacinths are through blooming, their place can be taken by summer flowers. Lift the bulbs carefully and replant them in an odd corner of the garden where they can die down naturally. They will then be fit to flower next season. If preferred, Daffodils may be left undisturbed, as can Snowdrops, Crocuses, Scillas and Grape Hyacinths. Unless the ground was manured the previous autumn it should receive a dressing of well-rotted fertilizer now, but this should be well forked in before any planting is done. Remember, well-rotted manure is dry and crumbly and not wet and "steamy", as it is when it comes direct from the stables.

H. F.



Photo by Charles J. Ott

Mexican Shell Flower or Tigridia

MOSSES

HELEN MARSH ZEINER

IN the botanical sense, the word "moss" is restricted to a specific group of plants; but in common usage almost any finely divided minute green plant is called a moss. For example, reinder moss and deer moss (old man's beard, tree moss) are both lichens. The "moss" with which Longfellow's murmuring pines and hemlocks were bearded was a lichen. Spanish Moss is a flowering plant of the pineapple family. "Moss" on the shady side of a tree is an alga.

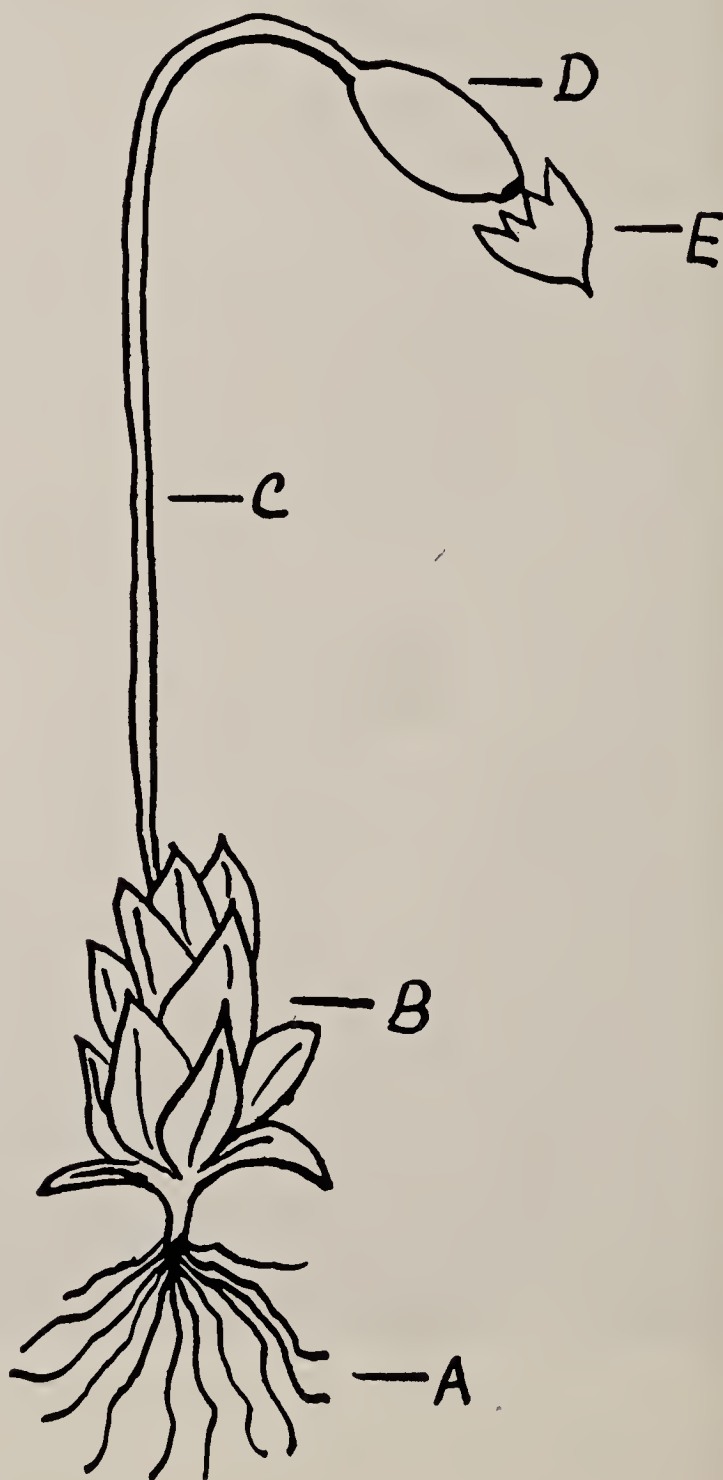
The true mosses are so much alike that a general description will serve for the whole group. If we separate a single plant from the mat in which mosses usually grow, we will find at the base fine hairlike structures which anchor the plant in place. These are called rhizoids, and are much simpler in structure than a true root. Next we find a leafy shoot whose true beauty is best appreciated if viewed through a hand lens. The leafy shoot may be surmounted by a long slender stalk ending in a capsule. The capsules are useful in identification for they are easy to see and are characteristic of the species. In the life cycle of the moss plant, the capsule plays an important part in reproduction.

Within the capsule are formed many extremely small spores. A cap-like structure, the calyptra, covers the end of the capsule. Sooner or later the calyptra falls off, and when the spores are mature they escape through an opening in the end of the capsule and may be carried long distances by the wind. A spore which alights in a suitable place germinates and grows into a much-branched green filament, the protonema. This may spread into a considerable mass. Then buds arise on the protonema, and each bud de-

velops into a green leafy moss plant. The spreading of the protonema accounts for the masses of individual moss plants which form the familiar mats of moss.

After a period of development, male and female sexual organs (antheridia and archegonia) are produced at the tip of the leafy shoot. Sometimes both antheridia and archegonia

Diagrammatic Drawing of a Mature Moss Plant, A. Rhizoids B. Leafy Shoot C. Stalk D. Capsule E. Calyptra, shown detached from capsule



are formed on a single plant; sometimes a plant produces one or the other. A sperm produced by an antheridium unites with an egg produced by an archegonium, and from this union develop the stalk and capsule. Within the capsule spores are formed, and the life cycle is ready to begin again.

In addition to this somewhat complicated method of reproduction, the mosses develop vegetatively with a great deal of success. The ability of the protonema to spread into a mat several inches across before forming leafy plants has already been mentioned. Old leafy plants, especially if injured, may develop protonema and continue the spread of the moss. Leafy plants also produce runners and offshoots and sometimes special buds which become separated from the parent plant and develop into new plants.

Mosses, like lichens, are important soil builders. They generally follow lichens into a bare area, establishing themselves in the substrate prepared by the lichens. We often find mosses and lichens growing together on rocks, but we should remember the lichens came first and without them the mosses could not have established themselves.

We think of mosses as inhabitants of moist places; but this is not always true, as for example, the moss growing with lichens on a rock where it receives moisture for active growth only at certain seasons of the year. The mosses are really very widespread in their distribution, and almost all climates and almost all habitats have their characteristic species.

One of the most important of all mosses is the famous sphagnum moss, which is found growing in bogs and other moist places. Sphagnum is one of the primary components of peat, with which every gardener is familiar. Extensive deposits of peat which have

become compacted are a source of fuel in some parts of the world. Over very long periods of time such compacted peat deposits may be converted to coal.

The leaves of sphagnum contain large dead cells intermingled with small green cells. These large dead cells absorb and retain moisture, and it is largely because of them that sphagnum has such important absorptive powers. Because it can absorb and retain moisture, it is used for packing plants for shipment and is sometimes used as a medium in which to germinate seeds or to grow certain types of plants.

The absorptive qualities of sphagnum plus some antiseptic qualities have made it important over the years for use in surgical dressings. Even as recently as World War I sphagnum was used in this way; but it has now been replaced by more efficient materials.

From time to time most of us have gathered mosses to use in dish gardens or flower arrangements, a harmless practice if we use discretion in taking the moss, leaving plenty to reproduce itself and never denuding an area. Mosses should be conserved along with our more conspicuous flowering plants.

If we remember the importance of mosses and lichens in building soil so that larger plants may take root, we will treat them with respect. Let us enjoy the delicate beauties of the mosses and lichens, but let us not forget the role they play in nature's scheme of things.

Anemones are fine subjects for the rock garden but should be chosen according to the soil. A few must have moist conditions and should be planted at the foot of the rock garden or where running water forms pools.

THERE CAN BE GARDENS

Anywhere in the State that People Live

WE believe that everyone should have a garden with flowers and trees and lawns. Some have gotten the idea that these things are only for those living in the parts of the state which are more favored horticulturally. The pictures on pages 20-23 show that there are attractive landscape plantings all over the state—on the plains, in the mountains and in the irrigated areas.

It is true that gardening here is different, and we must learn to recognize these differences and work with them, but there is nowhere in the state where people choose to live that some nice plants will not grow. In the higher altitude towns many of the familiar plants of the lowlands will not survive, but at the same time many plants which give just a mediocre show lower down will make a grand display in the cooler weather found at high altitudes.

The plains offer difficulties in the way of lack of water, hot summers, cold winters, high wind and alkaline soils, yet, even in the most difficult situation many nice things can be grown if they are selected for their tolerance of these conditions and cultural practices are adopted to make them more happy.

The twin problems all over the state are to select the plants which are best adapted to the particular conditions and then learn how to so modify the conditions to fit the requirements of the plants. We must learn to water more thoroughly, to mulch so that we conserve what water we have. We must learn to add humus to our soil to improve its physical structure and help counteract the generally alkaline condition. We must learn how to shade or protect from

the wind some of the nicer, but more difficult, things, until they become established. We must plan for the future by selecting the nicer, slower-growing things instead of only planting the quick-growing, weedy things.

Gardeners of Colorado should not attempt to duplicate the grand displays of Azaleas, Flowering Dogwoods, Japanese Cherries or Magnolias of other, older areas; but develop all the many fine things that can be grown here. If, at high altitudes, it appears that nothing but Spruce and Thimbleberries and Sweet Peas will grow well, then plant a lot of them and of the best varieties possible. If only Lilacs and Chinese Elm and Ponderosa pine will grow well, a grand display can be had with them if they are carefully planned. Colorado may be famous, not just for one flower or tree, but for dozens of them, as will grow best in various altitudes and situations.

This association would like to be helpful to every community in the state, or the whole Rocky Mountain Area. We would appreciate pictures and stories of good gardens or plantings anywhere over the area—plantings which might give other gardeners an idea that they could carry out in their community. Restrictions of time and finances make it difficult to travel over the area as much as we would like, but all our good friends through the region may help by sending their stories and pictures.

We hardly ever think to stir the soil of our bulb beds; do this with a mulcher (hand cultivator) soon as shoots show above ground. Handle carefully so as not to snip off these shoots.

Fort Collins



Lamar



Boulder



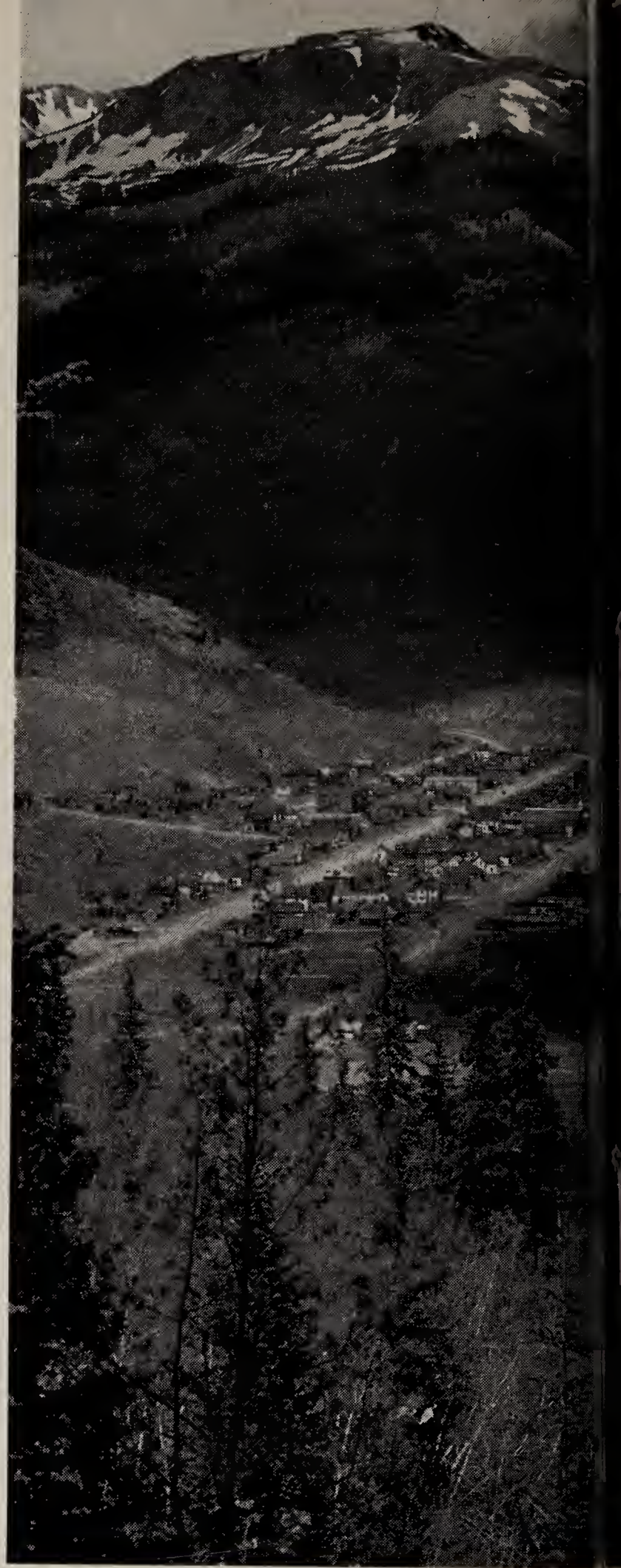


Alamosa



Byers

Golden



There Are Gardens and

In every corner of the state there can make them. These folks, as is natural with were good enough to show to others, so as a few pictures, shown here, of those that

Above is shown the town of Silverton hope they appreciate and will preserve.



Leadville



Georgetown

Grand Junction



ners All Over the State

good gardens and good gardeners that
rs, have not thought that "their gardens"
travelled over the state we have snapped
to us.

surrounded by one vast garden, which we
Chas. J. Ott.



Littleton



Pueblo



Rocky Ford

ROSE SYMPOSIUM

As Given by Members of the Home Garden Club at the Rocky Mountain Horticultural Conference, January 2-3, 1951

OLD ROSES

LULA ROSE MORSE

DEEP in the heart of a rose is the joy, the pathos, the greatness of the human race." This is the statement of R. C. Allen of the American Rose Society in his introduction to the "Romance of the Rose" by Josephine Craven Chandler. We are indebted to this author as well as to Mrs. Frederick Love Keays, author of "Old Roses," for much of the information used in this paper.

We are prone to consider the rose a modern flower, yet the rose is older than history, older than any known civilization. It is one of the oldest of vegetable forms. We find its imprint—leaf, stock and flower—still preserved in stone where it pressed against prehistoric slime.

The rose is found in legend, story, music, art, literature, even in architecture. The Greeks esteemed the rose; Sappho, the woman poet of Greece, named it "The Queen of Flowers." She wrote about 600 B.C. Heroditus, the father of history wrote 500 years before the birth of Christ of the Flower of a Hundred Leaves in the garden of King Midas.

It has been estimated that during the time of King Solomon there were 300,000 roses in the hanging gardens of Babylon. Traders and crusaders brought roses from Asia to Europe during the middle ages, and from there they spread throughout the world.

As early as 4 B.C. roses were raised in the earliest hot houses. This was in Rome, the city given over to voluptuous excesses. For every honorable occasion, the palace floors and even the streets were covered with rose

petals. Roses alone used at a Nero feast cost \$160,000. Roses came into their own all over Italy. The traveller today sees the imprint of the early widespread growth of the popularity of roses. The Romans hung a rose over every important conference table, indicating that the group was not to be disturbed; hence, the term, "sub-rosa", which has become synonymous with a secret meeting. Our grandmothers used roses as a motif around the chandelier moulding on the ceilings. It might have a symbolism in regard to the "conferences" held under them.

The Turks never let a rose lie on the ground; it was considered sacred. Egypt was slower to adopt the rose, but during Cleopatra's time it came to supplant the lotus, the national flower. When Mark Antony visited Cleopatra, it is said he walked knee deep through rose petals.

The early Christians used the rose in their symbolism. The five petaled rose signified the five wounds of Christ; the white roses was significant of the virginity of the Mother of Christ.

The French loved the rose before England fell under its spell, but England did come to praise and prize the rose. In monastery gardens, it was grown for its culinary and medicinal properties. It became the ecclesiastical emblem of perfection, note the Golden Rose of Rome, the blessing of the Pope on Rose Sunday, its use in the architecture of the Rose Window and in sculpture as an art motif. Winchester Cathedral has maintained a rose garden since the

9th century. It also had its secular uses. Elizabeth of England demanded as rent in one instance "One red rose to be delivered on the 24th of June each year." This has become traditional. In America in 1731, 5,000 acres of land were granted to William Penn, the rent being one red rose on the 24th of June each year. After the twelfth century, the rose became England's emblem of heraldic devices, four types being used, with its own significance.

Mrs. Keays listed five roses as those typical of "Old Roses," and quaintly classifies them by their scent. She says, "The old-timey perfume of the centifolia, the dusky sweetness of the Damask, the refreshing sweetness of the China roses, the gracious sweetness of tea roses, the woodsy pungency of the moss rose, the scent of winter apples in the foliage of the sweetbriar, all these are scents of old roses, yet how various."

Persia used the damask rose for perfume. Oriental attar of roses was the only perfume known till recently. Rose oil was used in medicine and for embalming. Far Eastern cookie recipes as well as early English call for Rose Water. In Persia, roses grow in groves which furnish homes for the nightingales. In the evening the rose exudes its sweet fragrance and the nightingale pours forth its wondrous song.

Oscar Wilde gives us the story of the nightingale that fell in love with a rose, a white rose. Each evening the nightingale sang to the rose and each evening the rose exhaled its fragrance on the air and opened its petals wider in response to the touching lyric. At length one evening, as all roses must, the rose began to wilt. The nightingale sang its most impassioned song and in beating its wings near the rose he pierced his breast against a thorn. The rose became

fresher and crimson with the bird's blood as he sang his love song. The nightingale finished his song to fall lifeless at the feet of the revived flower.

The centifolia, the hundred leaf rose, was brought to France from Asia by a Crusader. He was somewhat a saint and somewhat a rogue. He went in search of the Holy Grail, which he failed to recover, but he brought back the centifolia, the red, red rose with its heart aflame. Through all the succeeding years it has been a source of revenue as the base of perfume.

The cabbage rose was brought to England by Dr. Linacre, physician to Henry the VIII before 1560. I was about to tell you that this rose was the inspiration for the song, "The Last Rose of Summer." Moore wrote the poem. However, another author asserts that Old Blush furnished Moore with the inspiration. At any rate, we have the song and Old Blush has an honor which no rose can take from her. It was brought from China in the Clipper ships along with other treasure. It alone of all roses bloomed twice each year. It was the most sturdy of the progenitors of the roses which resulted in perpetual bloom in our gardens.

The beginning of the 19th century saw the entrance of Josephine, later to become Empress of France as the wife of Napoleon, and the development of the rose as a modern flower. Josephine inveigled Napoleon to purchase for her a huge estate on the outskirts of Paris. There she abandoned herself to her love for the rose. She began the process of hybridization; in 1800 there were but a scant hundred varieties; in 1802 there were 250 on her estate. In a few years there were hundreds. We owe a debt to Josephine who used her passing love for Napoleon to procure the



means, even after his love for her had waned, to produce varieties of roses beyond our comprehension.

George Washington is credited with having grown a hybrid rose at Mt. Vernon; he named the rose, Martha Washington. He permitted it to be grown and sold thus providing a basis for rose history in America more than five generations ago.

We can appreciate the ambition of a rose when it will "send its roots three feet to get its feet into rich clay; when it will throw its swinging branches out to hook into the soil so that it may bring its youngsters into

the world hitched to home; or send its suckers into the soil ever so far to break into new plants, hanging on to mother—nature tells a vastly interesting story in the protective habits of Old Roses."

I trust no one will complain if I add a line to a bit by Charles Kingsley.

Is not old wine wholesomest, old pippins toothsomest,

Old wood burns brightest, old linens wash whitest.

Old soldiers, sweethearts are surest,
Old lovers are soundest. (Charles Kingsley)

And memories of old roses are fondest.
(Morse)

TYPES OF ROSES

By MRS. E. J. MAYNARD

Everyone knows a rose. It is the queen of all flowers and has long been a universal favorite. It blooms as beautifully for the lowly home gardens as it does for the wealthy estate owner. Roses can be enjoyed in a garden or cut and brought indoors. Roses are favorites for bringing messages of love or sympathy.

Let us first acquaint ourselves with favorite rose types. There are about a dozen types available for our American Gardens, in many species and varieties. To be sure, few of our gardens have the space to have all types, and all types are not adaptable everywhere in our United States.

There are four principal rose types which can be grown in our Colorado climate—the shrub, the bush, the climber and the tree rose. There are five distinct bud forms—the slender or tapering, the pointed, the ovoid, the urnshaped and the globular; and there are also six flower forms—the globular the cupped, the informal or cactus, the imbricated, the flat or thin, and the pointed or high centered. We can find roses in many sizes and shapes, and they can also be very fragrant.

Let's first consider the shrub roses. In this group are the familiar Rugosa Roses, which are often used for hedges and borders. This class also includes the old-fashioned kinds like we used to find in our grandmother's gardens. They are very valuable for their hardiness and have spiny stems and wrinkled foliage. Some of these are known as the Damask, Moss, Cabbage, French, Scotch or Sweet Briar roses.

The bush roses are the prevailing favorites, especially the Hybrid Tea Roses. There are also the Miniature,

Fairy or Baby roses and the Polyantha and Floribunda. The Polyantha is a small edition of the Floribunda Rose. The Miniature or Fairy Rose is a tiny rose. It is useful for edgings, to border sidewalks or rose beds. It can be used in pots or porch boxes and is free blooming over a long period. The Hybrid Tea Rose is the result of a cross between the Tea Rose and the old favorite Hybrid Perpetual. It is an everblooming or monthly rose and flourishes in gardens all over the country. It is vigorous in growth and spectacular in its range of colors. These roses are especially good for indoor arrangements. There are so many exciting kinds to choose from. They are noted for their long stems and pronounced fragrance. The Hybrid Perpetual Rose is a large bush rose that produces but one crop, usually in June or July. It grows twice the height of the other roses and is unusually vigorous. It is best grown alone and often produces large blooms.

Climbers are in four groups, the large flowered, the small flowered in clusters, the semi-climber or pillar rose and the creeper or trailer rose. Among the large flowered we find New Dawn, June Morn and Summer Snow. The small flowered are the Ramblers and Dorothy Perkins. Then we have the Creeper or Trailer Rose, the Memorial Rose being a good example. The Climbing Hybrid Tea rose is in the experimental stage in this climate but the Climbing Peace bids to be a favorite.

The Tree Rose was developed by budding regular hybrid tea roses onto a tall understock. This rose needs the same care as the hybrid tea but needs unusually careful protection in winter, either boxing it in dirt or taking it up entirely and burying it deep. Tree Roses really involve a lot of work.

TEN BEST ROSES FOR DENVER

By MRS. HOMER S. HOISINGTON

This is a most controversial subject. I was told that if I asked ten different people to give their opinion on the ten best roses for Denver, I would get a hundred different answers. As I didn't want that many different answers, I didn't ask ten other people.

A little over 100 years ago, a new race of roses was born that completely eclipsed the other types of roses; one characteristic that had long been awaited was their ability to produce more than one crop of flowers a season. They have been superseded by the hybrid teas.

There are two ways to start growing roses. One is to buy a special offer of a dozen two year old field grown ever-blooming roses for \$1.98. The other is to plant roses all around your home after reading a flowery article which paints a glowing picture of how simple it is to make your garden a bower of roses almost overnight. Either way, you are almost certain to be disillusioned before the first year is over. The bargain roses probably won't measure up to expectations. Also roses won't grow just anywhere in a garden. You must find the best location and arrange the plants to give the most pleasing effect.

When the American Rose Society decided to conduct a symposium of its experts, located in all parts of the United States to find out which roses they liked best, the final selection of the dozen highest ranking hybrid teas proved a well balanced assortment: Crimson Glory, deep red; Peace, pale to golden yellow tinted with pink; Charlotte Armstrong, carmine red to cerise; Etoile de Hollande, deep crimson; Mme. Henri Guillot, raspberry pink; Eclipse, clear yellow;

Good News, coppery buff, tinted with shell pink; Mrs. Sam McGredy, scarlet and orange; Grande Duchesse Charlotte, begonia rose; Golden Dawn, good yellow; Comtesse Vandal, salmon outside, copper and gold inside; Mme. Cochet-Cochet, mellow coppery pink. I have selected ten from a long list. There were so many good ones it was hard to leave any of them out.

Peace heads the list; as one expert said, it has good color and anyone can grow it. No rose of recent introduction has created such a sensation or has been awarded as many medals, certificates and prizes as *Peace*. The young French grower, Francis Meilland, named it Mme. A. Meilland in honor of his mother. The name was changed to *Peace* when it was introduced into this country in 1945 by the Conard-Pyle Co. How the rose became to be renamed is very interesting. Budwood was rushed out of France hours before the occupation and brought to the United States. The day Berlin fell it was renamed *Peace*. It has perfect buds, large deep centered flowers, the color ranges from delicate shade of yellow gold, alabaster and apple blossom pink. The shades vary from flower to flower through the changing seasons. The blooms are long lasting. The plant is as superior as the bloom. They grow to be quite large bushes and are disease resistant.

Crimson Glory is the most generally satisfactory red variety in the United States. It embodies the qualities all plant breeders look for, including long pointed high centered blooms with 20 to 30 petals, long cutting stems, strong neck, continuous bloom, rich coloring and fragrance and it is highly disease resistant. In time this variety will be of great historical interest since it has been widely used by hybridizers. It is one

of the parents of the Charlotte Armstrong.

Lowell Thomas is the finest to date of the deep yellow roses. The chrome yellow blooms open from beautifully shaped buds. The color is penetrating, clear and deep. It is a strong grower with good foliage and stiff stems.

Charlotte Armstrong is the best in the light variety. The bud is long and pointed opening to cerise in hot weather and spectrum red in cool weather. The foliage is semi-glossy, deep green and highly resistant to mildew.

Eclipse has a long streamlined bud of rich gold without shading. You can depend on *Eclipse* for almost continuous bloom on strong upright plants with healthy dark green foliage. The flowers are produced on long erect stems suitable for cutting.

Forty-niner is a Hybrid Tea and a descendant of Charlotte Armstrong. This is probably the most brilliantly colored bi-colored rose ever introduced. The outside of the petals is a rich chrome yellow; the inside face of the petals is a vivid oriental red. Unlike other bi-color roses, this color combination holds remarkably well during the long life of the flower, regardless of sun and heat. The plants have exceptional vitality and bloom producing capacity. The foliage strongly resists disease and the tall plants and long flower stems are a joy to behold. This is the second All America selection for 1949. Of California origin, its name was selected in commemoration of the gold rush days. In the words of the introducer, "there is more than a hint of gold in the rich colorings of this rose."

Of the blends, *President Herbert Hoover* and *Taffeta* are popular. *President Hoover* is a combination of cerise pink, flame red and yellow.

The brilliancy of color is somewhat dimmed by hot weather. The clean heavy foliage is an added attraction. *Taffeta* is outstanding in its ability to produce long stemmed, perfectly formed buds in rich pink and salmon tones. Foliage is glossy green when fully developed but toned mahogany red when young. This rose was subjected to extensive testing before introduction, and reports from all sections of the country were most favorable. *Taffeta* is patented and was an All-America selection for 1948.

Tally Ho was the winner of 1949 All-America selection; the inside is pink, reverse rich crimson.

Show Girl is a good selection for a spectacular deep pink rose. The buds are huge, but artistic in spite of their size since they are long and tapered. The buds are slow to open, and when the weather is favorable, the expanded blooms are glorious and immense in size. Tall, straight stems, heavily textured petals, and long lasting qualities make this an ideal rose for cutting, exhibiting at shows, or garden display. It is hardy in northern gardens, which is true of most roses originating in California.

Snow Bird is one of the most prolific bedding roses. It is pure white, fragrant, and it has perfectly formed full petaled blooms often four inches across.

I have given you the experts opinion on the ten best roses. Now, I should like to give you the opinion of an amateur. I am the amateur. I will give you *Peace*, *Crimson Glory*, *President Hoover*, *Signora*, *Mme. Joseph Perraud*, *Edel*, *Condensa de Sastago*, *Forty-niner*, *Dame Edith Helen* and *Rose of Freedom*.

Of the climbing roses the *Paul Scarlet* is the most popular. Of the floribunda species the *Betty Pryor*, *Pinocchio* and *Elsie Poulsen* are good.

CULTURE OF ROSES

By MRS. E. J. MAYNARD

Roses are sun loving plants and the beds should be placed where they get the sun at least half a day. They do not like winds and should be protected from the prevailing winds.

Roses need a medium heavy soil. Most good garden soils are ideal. Do beware of contractor's earth. When building a new home be sure that your top soil is put to one side for your future garden. Good drainage is essential as roses do not like wet feet.

When buying roses **BUY ONLY THE BEST!** By this we mean buy from a competent nurseryman that has handled them correctly. He will have correct understock, correct budding and correct storage which are most essential. Be sure to purchase No. 1 grade field grown roses. They may cost more but are better in the long run. Bench roses from department stores may grow for a year or two but are not to be recommended.

Plant roses when dormant. However, potted roses are becoming quite popular. In this climate we feel that spring planting is more desirable. If the roses are dry when purchased, soak them in a pail of water for a short time before planting. Dig an ample hole so that the roots can be spread out with lots of room. Put a mound of soil in the center, spread your rose roots horizontally and place base of rose on this mound so that the bud is just above the level of the ground. This seems to be a controversial subject among rose growers, so plant the bud just below or above if you care to experiment. Work the soil around the roots but do not fill the hole with dirt yet. Fill it part way and then water thoroughly, letting the water carry the soil around the roots eliminating air pockets.

Afterwards fill the hole with dirt, mounding the soil up around the base of the rose bush as protection from the changeable spring weather. The soil on the mound can be removed as buds begin to appear along the canes and summer is here.

Late in the spring when the danger of freezing is past and the buds are appearing along the canes, it is time for your spring pruning. Take very sharp clippers and cut back the dead wood, just above the bud. In Hybrid Tea roses you will have stronger bushes if the roses are pruned to within 8 or 10 inches from the ground. However, in pruning Climber or Floribunda roses, cut off only the dead wood, and wait until late to make sure that you trim **ONLY** the dead wood as you will be surprised that some that looked dead early will just be late in budding, and your climbers bloom on old wood.

FERTILIZING AND MULCHING ROSES

By MRS. E. C. HORNE

Roses need a lot of water during the blooming season. Do not sprinkle your roses but irrigate them. Water on the leaves spreads disease, especially black spot and mildew. Soak good about twice a week or maybe three times during extremely hot weather. Always water in the morning with rising temperature instead of at night as that chills the plants and causes mildew.

In the spring fertilize your roses with good rotten cow manure and bone meal. If no cow manure is to be had, dig in a commercial fertilizer around plants. Also at this time a little sulphur can be added. A good mountain peat moss with sheep or cow manure can be used; this also makes a good mulch. There is a lot of

difference of opinion as to what is the best fertilizer to use.

Fertilize after the first blooming is finished and again in August but not too late in the fall or the plants will send out new tender growth that will freeze.

It is a good thing to mulch your rose bed as this keeps the weeds from growing, the roots cool and damp. Leafmold, peat or grass clippings are generally used.

PROTECTING ROSES

By MRS. HOMER S. HOISINGTON

For protecting roses in winter, it is well to use something that will form a light covering, such as threshed straw if it doesn't contain grain. One good way is to make a board fence, so to speak, around each rose and fill in with peat moss or other light covering. Another and more widely used method is to mound up the roses and cover with straw, peat moss or leaves and place pine boughs over them to keep the covering from blowing away.

ENEMIES OF THE ROSE

Insects and Diseases

By MRS. FRANK SMAY

I feel that this is a very unpleasant subject. Insects, Diseases, Enemies—all these words are rather repulsive, and when I begin to think about the subject it makes me sort of want to back away from it. And, if I continue to think about it, it makes me feel just a little weary, remembering the many hours spent during the summer months in trying to control these things.

Some one has said, "It seems impossible that anything so beautiful as a rose could have enemies!" But, we who grow roses know that there is nothing imaginary about this, but it is a cold, stern fact, staring us in the

face all the time, that roses do have enemies. And, if we want to grow roses and want to produce good roses (and every good rosarian wants to do that), then we had better fortify ourselves with a little knowledge along these lines in order to be able to combat these enemies.

Before I take up the different kinds of insects and diseases, I want to say this, and I feel that it is one of the most important, if not THE most important thing I am going to say: when you plan your rose bed and select your roses, **BE SURE TO BUY GOOD STOCK!** I feel that this cannot be over-emphasized, buy good stock from a reputable company that will stand back of everything that they claim for their roses. Then, with proper planting and culture, you will have good, vigorous, healthy rose bushes. And a really healthy rose bush can go a long way toward defending itself against its enemies.

We find that insects work in three different ways on roses. First, the chewing insects eat the leaves and even the petals of the rose. Under this class we find rose slugs, caterpillars, and beetles. The treatment is a good dose of arsenate of lead in some form. This works very well for everything but the adult beetles. These had best be picked off by hand and dropped into a can containing kerosene.

To the second group belong the borers. These insects work into the canes of the rose bush through the exposed ends where we have pruned, or another type goes right through the bark and into the wood whether exposed or not. The treatment for borers is to cut off all infested wood and to protect open ends by pushing thumb tacks into open ends, or by using wax to prevent them from re-

entering and starting their damaging work again.

The third group are the sucking insects—red spider, thrips, aphids, and scales. These draw, as it were, the very life blood from the plant, live on the sap of the plant, and, of course, rob it of its vitality. For red spider, thrips, and aphids, we find that spraying with nicotine sulphate (Black Leaf 40) is very effective, and since aphids appear in waves (and I might say in droves), the best way to handle them is to spray or dust every 24 hours for three successive days. You should then be rid of them for perhaps a month or more.

The treatment for scale is a little different. Remove all infested wood and spray thoroughly in early spring before new growth starts with an oil emulsion or lime sulfur.

As for rose disease, Blackspot, Mildew, and Brown Canker are the principal ones. Black Spot is by far the most serious enemy of the rose. It is highly important that we learn how to prevent it, for it cannot be cured. All the affected leaves should be picked off and burned. All leaves and twigs on the ground should be gathered up and burned. Treat the bushes thoroughly with sulfur in some form. Mildew is less serious than Black Spot, but is very unsightly. This is a fungous disease which covers the bush with a whitish, felty substance. This should also be treated with sulfur. Brown Canker is a disease which affects the canes of the plant, and is very destructive in some sections. The treatment is to cut out the infested wood, give a dormant spray, possibly in December, of lime-sulfur or, if it is in the growing season, use Bordeaux Mixture.

Some sprays which are very effective are objectionable because they stain the foliage and flowers so badly.

These things should be remem-

bered: Buy good stock. Keep bushes healthy. Keep rose bed clean and frequently cultivated. Spray or dust every week or ten days. Be diligent and systematic in your care of roses. "Eternal vigilance" might well be the watchword of rosarians.

This sounds like a lot of work, and it is a lot of work. But when we go out in our rose garden early in the morning (and be sure that you do go early), and gaze into the very heart of a perfect rose, or a near-perfect rose, and feel that we have had a small part in working with God to produce such a beautiful thing, then I'm sure we will feel amply repaid for all the work we have put into it.

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The Book—In the foreword to this book, "Ding," the famous cartoonist-conservationist, has written, "If you want to know about water this is it!" From the raindrop to the polar ice caps and the sun's force evaporating moisture from the oceans, you read of the gigantic mechanisms which bring us our rains and snows; the water we must have to live.

The Objective—With searching clarity the book makes a reader conscious of his own, personal dependence on water. It shakes and jolts one into realization of how utterly dependent we humans are on water in every hour of our lives; from the 6 to 8 pints we require to maintain life itself to the 1300 gallons per person per day to supply us our way of living—and the fact we must use our water wealth intelligently if we are to have sufficient water.

The Message—We are going about managing our water wealth in a helter-skelter fashion. Multiple, competing agencies are spending billions on conflicting, piecemeal programs. Our laws look backward to old conditions, not toward future needs. Some uses enjoy a monopoly against other uses and needs which must be recognized and fitted into the inclusive water management we must have or suffer.

The Significance—Without question this is a book which will be the most discussed among all those about conservation. No citizen, gardener, forester, truck driver, financier can afford to miss the dynamic, sometimes shocking presentation of our water

problems which this book gathers together and supplies in one volume. Nor can one disregard the basic, clearly defined suggestions of the author as to what must be done, by all of us, to secure the future in our water resources and their use.

The Author—Recognized as an outstanding leader in conservation of natural resources, Arthur Carhart is well known to most readers of THE GREEN THUMB. From 1919 to 1923 he was in charge of recreation planning in national forests of this region. For 8 years he was with McCrary, Culley & Carhart, landscape designers and city planners. In that period this firm designed grounds of many institutions and homes in this region and prepared the first comprehensive city plan for Denver. For 5 years Mr. Carhart directed the wildlife restoration program in Colorado. He is the author of 16 books and over 2500 articles, stories and serials published in national magazines. One recent project was editing CONSERVATION, PLEASE! for The Garden Club of America and the American Museum of Natural History.

WATER—OR YOUR LIFE should be required reading for all of us.
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BIRDS IN OUR GARDEN

RUTH ASHTON NELSON

WHEN we moved into the new home I promised myself to send a little report now and then under the heading above. Then the argument presented itself. It takes time for birds to become at home around a new place, there is nothing to write about yet. Now it has been a month, the bird baths are still unbathed in, the feeding table still untouched. But recently we put a load of manure over the bare ground which is to be lawn, then came a few inches of snow and this afternoon, as it seeped away, flocks of robins and pink-sided juncos appeared among the little pinons and fox-tail pines, carrying on their never ending search for food. The net result to us will be fewer weeds and insects in the garden later on.

Let me put in a plea to all neat and tidy gardeners, if you would have birds, don't be too neat and tidy. The ground-inhabiting, seed-eating birds need a tangle of brush, some unpruned shrubbery, even some last year's weed-stalks, for shelter and to provide feeding areas. And if you would encourage nesting robins don't fail to leave a little trickle of water in a mucky spot. You may have the opportunity to see Mrs. Robin selecting her nesting site, "trying it on for size"

and comfort, turning and fitting herself into a crotch of an apple or maple tree, and then watch her and her mate, with muddy breasts, carrying the muck and sticks, and shaping with their bodies the substantial cup which will hold those charming blue eggs.

Perhaps it may be of interest to mention the few species already noted here, as a possible background for further observations. We hope our location just across a little-used road from Monument Valley Park gives us an advantage in the eyes of the birds. From our windows as we watch the crows and magpies we wonder just what problems they may present as they come "adjusted" to us. Long-crested jays and red-shafted flickers are conspicuous to the ear as well as the eye. Along the road and ditch banks in the tangled undergrowth, flocks of pink-sided juncos and white-crowned sparrows are about, beginning now, the middle of March, to be musical at sunrise time. Frequently a large flock of western evening grosbeaks comes to rest silhouetted in the tops of the tall cottonwoods. They sound very friendly, keeping up a constant conversation among themselves. And now and then a pair of downy woodpeckers can be seen feeding up and down some old dead stubs.

An occasional unrecognized call or flash of wings in the park trees is tantalizing to one still somewhat kept in by the process of "getting settled," but one of the great comforts of this place is the realization that the park and the trees will stay and other birds will come.





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COLORADO MOUNTAIN CLUB PLANS TREE PLANTING TRIP

The Colorado Mountain Club will sponsor an overnight and a Sunday trip to the Mammoth Burn Area above Rollinsville, June 16 and 17. Those interested in the overnight trip will leave by bus from the Library at Civic Center at 1:30 p. m., Saturday, June 16. Saturday night's meal will be furnished, so bring your mess kit as well as overnight equipment. A hike is planned for Saturday afternoon. Those wishing to go to the area Sunday, June 17, will leave by bus from the library at 6:30 a. m. Coffee and beverages will be served at noon Sunday, but everyone should bring his own lunch. The Forest Service will furnish tools for digging. A pair of work gloves would be handy. Busses are due back in Denver by 7:30 p. m. An earlier bus will come back for those who wish to leave sooner. Round trip bus fare will be about \$1.50. For further particulars, contact the Colorado Mountain Club at TAbor 0677.

FOURTH ANNUAL NATURE LEADERS' INSTITUTE

The Nature Leaders' Institute will start off this year with a meeting at Evans School, 11th and Acoma, at 7:30 p. m., Wednesday, May 9. There will be many interesting exhibits and demonstrations of techniques used by various experts to make the teaching of Nature lore interesting.

Any one interested in learning new methods of interesting children in the beauties and wonders of Nature is welcome. There will be no charge. This series is sponsored by the Recreation and Leisuretime Division of the Denver Area Welfare Council and the Colorado Forestry and Horticulture Association.

Three outdoor sessions will follow. Saturday, May 12, 2-5 p. m., in City Park. There will be tree trails and games in the area soon to be developed as an arboretum. May 13, Sunday, 8 a. m. to 5 p. m., will be a trip to the nearby hills with experts to learn of the birds, animals, rocks, flowers and trees. Saturday, May 26, will be the final session with tree trails and campfire stunts, 3 to 9 p. m., at Stapleton Drive.

This Institute is not for children but for leaders of children. Registration for all sessions should be made at least 2 days in advance at Horticulture House, TA 3410.

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Seed will be planted and Colorado's scene will be improved. More important, the seed of conservation conscience will be planted in the minds of our future leaders. We haven't done too good a job of preserving our natural resource heritage. Given the opportunity, our young folks will do a lot better.

A ceremony will be held at Soda Lakes, May 5, in the afternoon, to start the Johnny Grass Seed project.




GARLAND SPIREA

As the illustration shows, the Garland Spirea, *Spiraea arguta*, is a very beautiful shrub when it is in full bloom. It is also a shrub of nice shape and foliage when not in bloom.

It is of the early blooming spireas which come at the time of the flowering almonds and early prunus. It is one of the few flowering shrubs which should have a light shearing each year when the bloom has faded. If this is not done it may have a tendency to become bare beneath and scraggly.

There is much confusion in the trade between this fine shrub and the old Thunberg spirea. This species is definitely superior, though *S. thunbergi* is one parent.

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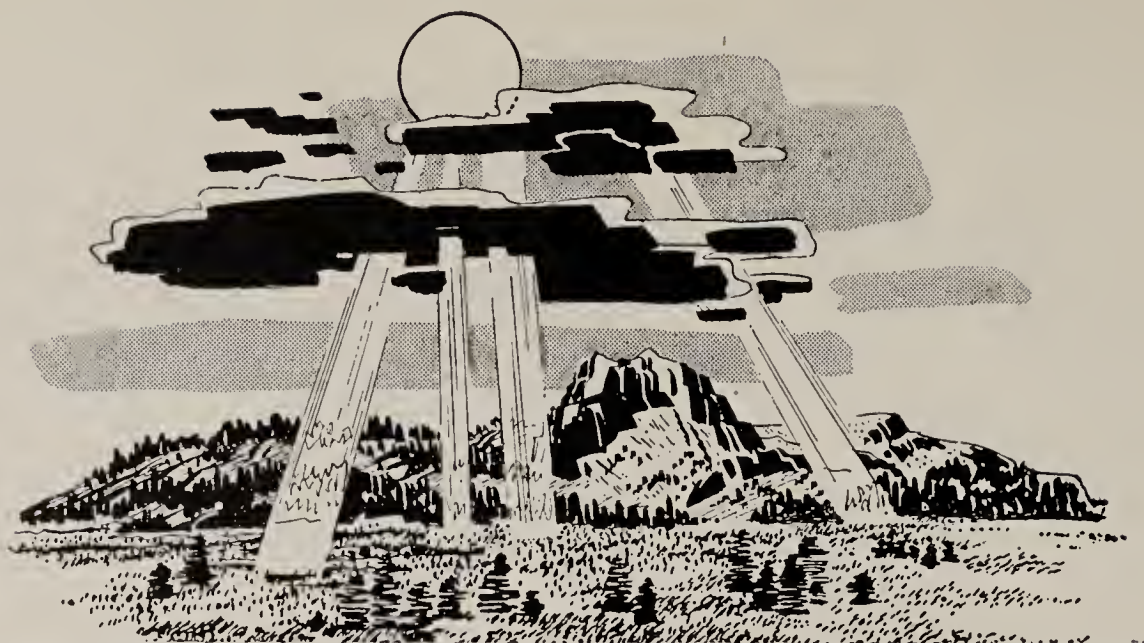


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MAY GARDENING

IF MAY conditions could continue all year everyone would be enthusiastic gardeners, for in May everything looks green and fresh, new buds are breaking into colors and the feel of spring is in the air. It is a shame to introduce any other note into the picture, but before the month is over we must come back to earth and begin the summer long fight to maintain our human supremacy over Nature by attempting to control the unwanted bugs and diseases and weeds. Enjoy all this new, fresh growth and the annual coming-into-life-again to the fullest before beginning the annual round of chores.

Transplanting of woody plants should be completed before the month is over unless you may get some dormant plants from a well regulated plant cellar or potted plants. Perennials may still be moved with some soil left around them and many of the tender annuals should not be set out until really settled weather in June. Lawns may be seeded any time this month.

The secret of pest free plants is largely in keeping them growing vigorously and in watching for the first sign of insects or disease and "nipping them in the bud." Watch especially for the first sign of aphids on the Junipers, and now there are an increasing number of cases of aphids on Pine and Spruce. Aphids are easily killed with a contact spray, but you must get them when they first start and actually hit them to kill them. Ants running up plants will usually indicate the presence of aphids.

If the normal rains and late snows come this month the problem of watering does not become serious. There is more of a tendency to overwater this month and this practice can lead to trouble later. Learn to water when things become dry, at any time of the year, but learn that it is just as bad for a plant to water it when it does not need it as to let it get too dry. By learning to water more thoroly each time and less often the roots of all plants are forced down where they are able to tolerate more extremes of climate.

The application of fertilizer is still a mysterious process to many new gardeners. A really good soil with plenty of humus in it does not need frequent applications of fertilizer. It is true that plants may be grown without soil if given the proper mixture of chemicals, but it will be a long time before we are forced to a general practice of water culture and most gardens will still be grown in just good brown earth. The greatest mistake of new gardeners is to assume that if a little fertilizer is good a lot should be better. Many new gardens are burned up with excessive applications of highly soluble fertilizers. New plants, either seedlings or transplanted plants do not like rich fertilizer near their roots, but they do like a good soil full of humus. Fresh manure is fine when plowed under in preparation for later crops but peat or leafmold is safer to use around plants.

Where weeds are likely to become a pest (and where is the place that they do not) it will save much later work to get them as they come through. This does not necessitate deep cultivation, but getting at them promptly. Learn to use mulches more and deep cultivation less.

There will probably be an unusual amount of dead in shrubs, trees and especially roses this spring. It takes no rule of trimming to remove this dead wood at any time that it becomes apparent.

Do not damage the leaves of tulips, narcissus and other Dutch bulbs until they have completely dried up as it is only through these leaves that a new bulb for next year's bloom is formed.

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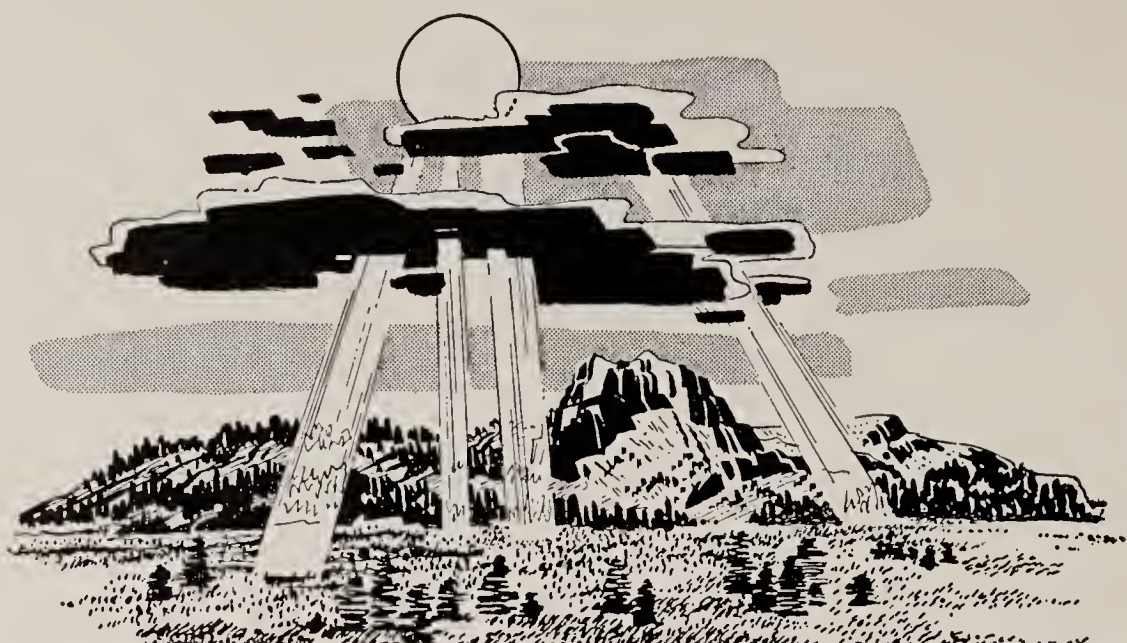
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The Green Thumb

Vol. 8

June, 1951

No. 6

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Picture on front cover of Peony, "Nellie". Photo by K. N. Marriage.

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JUNE SCHEDULE

June 3, Sun. Trip into the Ten Mile Range, near Breckenridge. Leave Horticulture House 7:45 A. M. Leader, Eliot Moses.

June 7, Thursday evening, 8 P. M. What's Your Problem? Is it weeds, bugs, diseases? June is the month when these things begin to annoy the eager gardener. If any of them are bothering you bring them down to Horticulture House, Thursday evening, June 7, and try to stump the experts. Mr. A. G. Barteldes, John Swingle, William Van Pelt, George Kelly, Moras Shubert, and others will be on hand to help you find out what you have and what to do about it.

June 10, Sun. Trip to Boulder to see unusual trees, Iris and wild flowers. Leave Horticulture House 8 A. M. Leaders for each part of the trip. Take lunch for noon.

June 17, Sun. Trip to Ghost Town of Corona from West Portal. Marjorie Shepard, leader. Leave Horticulture House 7:45 A. M.

June 20, Wed. First of the Garden Tours. To North Denver. See schedule elsewhere.

June 21, Thurs. Horticulture House, 8 P. M. A Trip to Mexico via John Roberts' incomparable kodachromes.

June 24, Sun. Leave Horticulture House, 8 A. M., to see the Alpine wildflowers in the vicinity of Loveland Pass. Joint trip with the Colo-

rado Mountain Club. M. Walter Pesman and Selma Bussell leaders. Bring lunch and warm clothes.

July 8, Sat. Trip up South Boulder Creek from East Portal. Leave Horticulture House, 8 A. M. Freida Vanderwahl leader.

July 14-22. Backpack trip into Snowmass Maroon Area. Heavy equipment taken in by horse. Walking about 10 miles a day. Cost about \$80.00. Register by July 10 and get further particulars. Leader, Mrs. Anna Timm.

HOW ABOUT A TRIP TO MEXICO?

Has the vacation bug begun to bite you yet? If it has, the program for Thursday evening, June 21, is just made to order for you. Mr. John Roberts has promised to bring his pictures of Mexico to Horticulture House and to tell us of some of the interesting times he has had in that enchanted land. All who heard Mr. Roberts last June, when he told about his adventures in the high country of the Andes will remember that exciting evening. And anyone who missed that program will not want to miss this time. The program will start at eight.

This will be the final evening program before we all relax for the Summer, but Horticulture House will be planning some good things for the Fall, and will expect to greet you all again in September.

PLANNING THE PERENNIAL BORDER

By GERTRUDE BALLINGER

TOO much emphasis cannot be placed on the importance of carefully planning your flower borders so they will give the maximum of bloom in colors and designs that are pleasing, instead of a hodgepodge collection of plants. So before you yield to the temptation of accepting any or all of the proffered plant gifts from friends and neighbors, be sure they fit into your design, or the results will be most disappointing. Selecting plants from the beautifully colored illustrations in catalogues simply because "they look so pretty" also brings many disappointments. What we really want can only be attained by

careful planning and strict adherence to that plan.

A satisfactory plan for a perennial border must take into consideration its location and all the physical properties that must influence the choice of material. You must know how much sunlight is available in each part of your border, for flowers are most abundant in just the right amount of sunlight. The slope of the ground will also help to determine the material you may plant; a north slope frequently prevents frost damage by delaying early spring growth. Is there a lot of competition from tree roots? If so, you will be greatly limited in varieties of perennials that can overcome this handicap. All along the Rocky Mountain slopes the prevailing wind may materially damage tender perennials, so that shrubbery, vines, trellises or walls will be needed to shield those parts of the border that lies in its path.

Now how about the soil? If it is very sandy or heavy clay, the generous addition of humus, well rotted manure, peat or leaf mold will reward you with finer foliage and bloom. Until this humus can be added, it is wise to select plants that will tolerate the existing conditions.

Consideration must also be given the existing background—the fences, walls, garages, ash pits, incinerators, public service poles, shrubbery, trees and vines in adjoining gardens as well as your own. Look out of all the windows of your home and decide just what pictures you wish to make. If the existing background features are good, emphasize them with your perennial flowers; if they are unattractive, screen them out. Remember, each window should appropriately



frame a picture of beauty. Remember also your terrace or patio so that the choicest flowers may be seen from that area.

Keeping in mind all of these pertinent factors, you are ready to study the selection of plant material. First of all, it must be hardy in this region. If it does well for your neighbors, it is obviously safe to grow. If in doubt, consult George Kelly's Garden Book, **ROCKY MOUNTAIN HORTICULTURE IS DIFFERENT**. To be sure that your plants will fit into your scheme, you must know the ultimate height and spread. The taller plants should be at or near the back of the border, those of medium height toward the middle and the low growing at the front. Avoid crowding your perennials, for they are much healthier and more attractive if given room to develop naturally.

Consider the types and texture of the plants, for the wise combination of tall spikes of bloom with rounded clumps of flowers, the feathery, light foliage contrasted with heavy, compact growth adds so much interest to the design with its eye appeal. Remember that your garden is your own personal setting and so its design and colors should compliment you and your home. Flower colors and forms are the paint with which you are making the pictures you wish to see. Plant flowers whose colors will add to the beauty of the rooms where they will be featured, not clash with them. They should also be complimentary to your own coloring and clothing so they will show you at your best. To get a full season of bloom, make a list of flowers in the order of their bloom, month by month, noting color of bloom, ultimate height and spread of the plants, listing also the season and color of bloom on shrubbery, when their berries or fruits appear



Photos by K. N. Marriage.

and their color, and the color of summer and fall foliage. This is important to help avoid the mistake of finding a clump of orange flowers blooming directly in front of a shrub that is covered with bright red berries, or a clump of delicate lavender chrysanthemums beside a mass of brilliant red fall foliage. The season of bloom on many perennials may be extended by keeping all fading flowers cut. When planning your color pictures, be generous with the white flowers around the patio or terrace for they are the only flowers that show at night. And why not select flowers with fragrance so you can smell them as well as see them?

By careful planning and planting of only as much as you can easily care for, you can have a colorful border throughout the spring, summer and fall, and an attractive winter pattern of trees, shrubs and berries.

MEDIUM HEIGHT PERENNIALS FOR THE BORDER

By MRS. ELIZABETH BAHM

ONCE in a while we find something which we think is wonderful and wish to share with others. That is why I wish to tell about some of the lovely perennial plants that can be used in a border planting. These plants that I will mention average from two to three feet in height; a few may grow taller under favorable conditions. Short or tall they are all beautiful and easy to grow.

First, let's consider the early ones that bloom along with the spring bulbs. The yellow daisy-like *Doronicum* or Leopardbane is very showy and is invaluable for cutting. The yellow and orange *Trollis* or Globe Flower is beautiful in clump plantings and is particularly useful for cutting. Both of these flowers like rich soil, plenty of moisture and some shade.

The rosy, plumey bleedingheart or *Eximia* gives us bloom throughout the summer, from tulip time on to the first frost and both the blossom and foliage are wonderful for cutting. It is very valuable for clump planting.

The *Aquilegia* or Columbine comes in many beautiful colors—red, yellow, white, and of course, our lovely blue and white mountain columbine. All the columbines are easy to grow and some of the yellow ones give us bloom throughout the summer. All do well in either sun or partial shade except the mountain columbine; it does best in shade. All require plenty of moisture.

Now, let's go into summer. For blue, try *Centaurea* or Cornflower. Of course these plants come in blue, red, pink, white and violet-blue, but regardless of the color, they add grace and beauty to any garden and are wonderful for cutting.

Blue Flax lends airiness to the border and it seems to be a bit of the sky resting in the garden so true blue is its color. For spikes, one may use blue and pink *Veronica* and white and blue *Campanulas*. They add much to any garden not only for looks, because they are grand cut flowers.

Tall Bearded Iris and the Intermediate Iris start blooming in May and bloom into June, so they should be considered indispensable and irresistible in any garden. Both foliage and blossoms are wonderful for cutting.

The lavender and white Sweet Rockets with their delightful fragrance should be a *must* in every garden, and they are so easy to grow. The red, yellow and bronze shades of the *Gaillardias* are lovely in some spots and are good cut flowers. The new improved *Gaillardia* named General George Patton is enormous in size, four inches in diameter, and its petals are brilliant, dark red with fluted golden tips. It blooms all summer and produces as many as thirty flowers on a single stock. All *Gaillardias* need a warm, dry, sunny location to do best; a little neglect in watering doesn't seem to worry them either.

The Papaver, or Oriental Poppies are wonderful, especially in the new improved soft shades. They have shown a remarkable increase in public favor in recent years. They come in rich tints of rose, salmon-pink, white and lavender and planted singly or en masse they are beautiful. Most any kind of soil suits them but they do best in rich loam.

Phlox is indispensable in border plantings. No other has so many de-

sirable attributes or adapts itself so happily to all gardens. Phlox should be planted in groups. They bloom from early summer until hard frost providing they are not allowed to seed.

Pyrethrum or Painted Daisies are enchanting and are not hard to grow. They have been improved until some of the new double reds and pinks are very beautiful and for cut flowers they are some of the best.

Russel Lupines have well rounded spikes and come in the most extraordinary colors—blue, pink, red, yellow, purple and self-colors, also an assortment of bi-colors.

The large White Alaska Shasta Daisy and the new double Esther Reed Daisy make wonderful white flowers for cutting. They are easy to grow, but should be divided each alternate year. One or two plants will give you several nice plants for the border.

Now, the later blooming plants, but please understand many of the plants previously listed will bloom on through the summer if their seed pods are picked regularly.

Anthemis or Yellow Marguerites are free flowering, have elegant cut foliage and the flowers are especially fine for cutting. The White Marguerite does well in any garden and helps to make a lovely arrangement.

Dwarf mums do well in a border and help to brighten it as they have colors ranging from soft yellows to deep reds.

The Wilson Lily is somewhat like the Rubrum Lily in color but hardier. The Coral Lily is another easy lily to cultivate. The Hosta Lily is undemanding and so fragrant. Both the blossom and the foliage make a cool looking hot weather arrangement. Lilies do need moisture and some shade.

The blue, white and pink Platycodon or Chinese Balloon Flower

should be an added attraction in any garden. Also they grow in spikes and we do need some spikes to break the rounded clumps in the border. Monarda or Bergamot comes in shades of blue, red, and lavender. It fits well in a wild garden or city garden, and the fresh mint fragrance is another reason to use this plant.

Hemerocallis or Day Lilies are a new family of hybrids that cannot be equalled for beauty, color and hardiness. They are huge, showy, pleasingly fragrant and come in multitudes of shades—from soft, glowing amber to fiery coppery reds. If careful selection of plants is made there will be flowers in abundance from June to September. They require very little care.

Both the foliage and flowers of the Siberian Iris and the Spurious Iris lend charm to the garden. They should be planted in sentinel clumps through the border.

To me the dwarf type fall aster or Michaelmas Daisy is the swan song of summer. There are other Michaelmas Daisies but I have tried to list only plants that would be suited for the middle of the border so I say "dwarf" where there are plants of the same species that grow taller.

These plants I have mentioned will grow and do well in and around Denver if given a little care. All need not be used in one border but by giving the colors, height, etc., I thought perhaps it would help you to plan your border.

There is an old Chinese proverb that goes: "If you wish to be happy for an hour, get intoxicated. If you wish to be happy for three days, get married. If you wish to be happy for eight days kill your pig and eat it. But if you wish to be happy forever, become a gardener.—Contributed by Jim Stewart.

TIMELY TIPS FOR THE PERENNIAL BORDER

By MYRTLE ROSS DAVIS

JUNE is the month when our perennial borders put on their show of the year. Peonies, iris, delphinium, columbine, Madonna lilies, lupine, poppies and many others are at their best during these rare days.

Daffodils and tulips are through blooming and their foliage is beginning to turn yellow and look rather untidy, but we must remember to not cut off their leaves no matter how badly they look if we want them to bloom the next year. They must remain to manufacture the food which will form a completely new bulb before the foliage dries up. After the leaves are yellow and dry is the time to dig the bulbs if they are to be moved and store them in a cool dry place for fall planting. If the digging is delayed until August the bulbs are harder to find and they will have grown roots and much damage may be done to the bulbs by pulling off these new roots. Tulips do not need to be dug every year or even every three years if they are planted from six to twelve inches deep in the first place.

Peonies make a big show in the garden and their foliage remains attractive throughout the season. If they are planted with their crown exactly two inches below the surface of the soil they will bloom for years. They do not like to be moved and if they are planted too deep they will not bloom and it does very little good to try and raise them nearer to the surface. It is perhaps better to throw them away and start over with new plants. The fall is the time to plant peonies.

Iris may be divided and trans-

planted any time after the blooming period has passed but it is better to wait until July or August after the new growth has developed. The new rhizomes are the best ones to save as they will give the best bloom the next year. Iris does not tolerate any kind of fertilizer on or too near the rhi-



zomes. They should be planted very near the surface of the soil.

Delphinium may be cut back to the ground after they bloom and they will blossom again the same summer. It is best not to cut all the stalks back at once but leave one or two stalks of leaves to manufacture food until the new growth has started. If some of the stalks are allowed to ripen seed and the seed is sowed just as soon as it is ripe, it will germinate very easily. The seedlings, which will bloom the next August, will not come true to type and color but it is very

interesting to see the wide variety that will come from one plant.

Although Columbine are a short-lived perennial, it is not best to allow them to self-sow, because most of the seedling will have yellow flowers. It is better to buy new seed from a grower who has not allowed his plants to hybridize, and scatter them in the columbine bed in August. The seedlings will get a good start before winter and will probably bloom the next year.

Madonna lilies are fussy about being planted too deep. If they are planted much more than two inches below the surface of the soil they will not bloom or do well. They should be transplanted and divided in the late summer when their foliage dries up and disappears. In the fall they grow a rosette of leaves which stays green all winter. An Easter lily planted among these lilies or the old-fashioned tiger lilies will sometimes spread a disease called mosaic which can do much damage.

Russel lupines with their many colored spikes of pea-like flowers are colorful and a joy to grow if the soil is right for them. It is difficult to say what texture of soil they prefer but when they are planted in great numbers they seem to help each other. They are a legume which means they belong to the pea family. All members of this family have nitrifying bacteria on their roots. These bacteria place nitrogen in the soil for plant use. When the bacteria is built up in the soil they all seem to do better. Lupine are rather short-lived so it is well to allow some to self-sow to keep new plants coming on every year.

Oriental poppies in red, orange and pink are large and brilliant. If their intense color does not clash with other

flowers in the garden they are very satisfactory. The foliage will disappear in late summer and they will make a new growth in the fall. They transplant best in late summer when they are dormant.

Perennials are perhaps less work to the gardener after they are once established and doing well but if we want color in our borders all summer long we must also have a few annuals to fill in that late July and August gap when most perennials are past their blooming period.

Lilies will grow and look well near certain shrubs — *L. auratum* (Do not expect them to be too long-lived in this area.) *L. henryi*, *L. hansonii*, *L. regale*, *L. tenuifolium*, *L. tigrinum* (both single and double), *L. philadelphicum* (Needs acid soil).
H. F.

Gaillardia. Photo by Robert J. Niedrach.



SUCKERS FOR SUCCULENTS

By ELIZABETH NIXON ECKSTEIN

WITH the possible exception of the nudists' convention of a year or so ago, the most colorful gathering to assemble in Colorado in recent years will be the biennial conclave of the CACTUS & SUCCULENT SOCIETY OF AMERICA, INC. While they are normal individuals in other respects, this group is slightly zany about cactus and, to a lesser extent, about one or more members of that extensive class of exotic plants known as Succulents.

Cactophiles have been known to walk barefooted over hard ground to secure certain species of cacti that were too small and well-hidden in the short grass to be detected otherwise than stepping on them! Others travel to remote places, braving numerous dangers and discomforts, to secure a rare specimen. No devotee of the cult has missed the sweet pain of self-denial of some necessity of life, at some time or other, to acquire a cherished plant. So it is small wonder that many of the country's collectors have been planning, saving and working for the Denver meeting ever since the last convention in Phoenix two years ago. For here they will swap experiences in plant culture, field adventures, pictures, and plants. They will hear talks by experts, participate in roundtable discussions, and go on field trips. And while most of them would "rather talk cactus than eat," group meals, including a buffalo bar-

becue at Red Rocks, will provide time for chomping and chatter. There will be the crowning of the king and queen and initiation into the Ancient Order of Cactus Nuts. A hat contest has been scheduled, with prizes for the best and funniest bonnets trimmed with live cacti and other succulents.

Speaking of the phrase "cacti and other succulents," many people wonder why the cacti are thus set apart from others of the group. This is mainly because cacti are all in one large family, whereas "other succulents" belong to many different families, rendering classification more difficult. The word *succulent* means *fleshy* or *juicy* and refers to structural peculiarities developed by any group of plants under certain growing conditions. High altitude, excessive sunshine, extreme heat, and sparse rainfall are the climatic conditions which, singly or in combination, limit the water supply of plants and induce structural changes which enable them to survive. Fleshy stems, leaves, and roots; tough and thickened skin; and special cell structure make for rapid absorption and large storage capacity for moisture and reduction of the rate and quantity of evaporation.

The fascinating, bizarre, and often exquisite forms of succulent plants are actually necessities for survival and not merely the weird whims of a playful nature. But this utilitarian purpose detracts not a whit from the oddity of obese leaves, leafless stems, and leathery epidermis that characterize the more extreme examples of succulence. The popular names *living rock*, *window plant*, *stone face*, *elephant bush*, *milk tree*, *cow horn*, *inch worm*, *Medusa head*, *plover eggs*, *star fish*, *tiger jaw*, *burro tail*, and *baby*

Martin Keul holds up his garden terraces with solid masses of Sempervivums.



toes, indicate their fantastic appearance.

A few months ago we had the privilege of discussing cacti in these pages. The "other succulents" differ from them in some respects, are remarkably similar in others. For example, whereas all cacti originated in the western hemisphere, succulents are native to many parts of the world. South Africa boasts the most native varieties of other succulents, as Mexico does among the cacti. Succulents, principally Euphorbias, may have spines as fierce as any cactus. One species even bears the name *pseudocactus*.

Only one collector within our range of personal experience has held steadfastly to the rule of cactus and no "other succulents." Most cactophiles find their interest irresistibly widened to include more and more members of this captivating and incredible group of plants. The general public, too, in ever-increasing numbers, is discovering their charm and exceptional adaptability to modern decor in home and garden. For the most part they are strikingly decorative while requiring minimum care. The dry atmosphere of many modern homes suits them perfectly. So does the crowded modern schedule that permits only sporadic watering of plants. It matters not at all that the soil dries out completely between waterings, just so the drink is long and deep when it is administered. Light porous soil with good drainage is necessary for succulents, as is a generous amount of sun in most cases.

Despite the new upsurge of interest in succulents, not all those making their bow in the flower shops these days are newcomers to the popular field. Some are old favorites. They are greeted by such exclamations as: "Why, mother used to have one of those!" or "Papa had a bunch of those

'way back when." That's right. Remember the *mother-in-law tongue*, the *crown of thorns*, the *partridge breast*, the *hen-and-chickens*, the *rubber plant*? Succulents, all—bound for new popularity under their more formal monikers of *Gasteria*, *Aloe*, *Sedum*, *Euphorbia*, *Echeveria* and *Haworthia*, to mention the best known.

Maybe there is a hitherto unknown chapter in YOUR flower love-life. Perhaps YOU have been cherishing some succulents unawares. Could be that you find your interest at least on the fringe of that earnest group duly incorporated as the CACTUS & SUCCULENT SOCIETY OF AMERICA, but jovially called "the cactus nuts" or "suckers for succulents." Of all ages, from all walks and stations in life, and every state in the Union, their one bond of fellowship is mutual interest in succulent plants.

YOU ARE WELCOME to attend the Fourth Biennial Convention in Denver, July 10-12. Field trip July 13-14. All except the final session will be held at the Lakewood Masonic Temple, 1440 Independence. Registration fee \$2.00.

Sedums clambering over a rock wall near Idaho Springs.



WHY TEACH NATURE?

By JOE PENFOLD,

of Izaak Walton League,

Opening Talk Given at Nature Institute, May 9, 1951

WHY teach nature study? Before I venture an opinion as to why I believe nature study should be taught, maybe we should define what we mean by nature study. To one person, it might mean learning to identify all the birds common to the region; to someone else it might mean learning the names of the principal trees and grass types native to our area; to still another, the growing of ornamental plants; the successful development of a home vegetable garden; or the habits of wild animals; or just simply how to consistently catch trout by dry fly, bait or nymph fishing techniques.

Any of these specific items of study prove a worthy channel for creating an awareness in adult or child of the processes of nature, and at the same time create what can be a fascinating hobby, of a type which will stay with the individual throughout his entire life.

I doubt if I would catalogue any of those specific studies as more than just a fragment of what I consider nature study to be.

Nature study means the study of nature, to be sure, but to have any real meaning to us as humans, occupying our small space in the universe, its study must be one which relates man to his environment. We are a part of an ecological whole. We are as dependent upon the wholesomeness of our environment, as is a herd of elk upon the habitat in which it lives. Louis Bromfield has a thesis that where wildlife can not survive, man can not survive either. I tend to agree with that thesis. I believe anyone who has viewed some area,

which has been farmed out, grazed out, and depleted of its soil resource, will have noticed along with the abandoned and disintegrating farm buildings, a noticeable lack of wildlife. By wildlife, of course, I do not mean what we popularly consider game animals or fish, there must be included all types of wildlife from the simple, minute soil organisms, the insects, bird life, predatory types as well as those sportsmen consider good fun to hunt or fish.

We are an inescapable part of this environment, just one form of life out of tens of thousands. We consider ourselves the top species of life. I don't object to that, but I do get restless at an attitude that man is the only form of life which needs to be considered. We seem to be cultivating a philosophy that we can neglect ecological processes, exploit our basic resource wealth, warp, twist and ravish the products of nature, and if that turns a neat commercial profit to someone, that it must be good and contributes to some undefined and often fantastic thing we call "progress." Along with that philosophy, we are developing an inability to measure and evaluate by other than quantitative methods. Quality seems less and less to be of importance, and sadly enough in the last analysis man himself is the one whose real quality of life and living must deteriorate first. After all, we are an end product of ecological processes as well, and the result of environment which we are fast trying to change and destroy.

In this great nation of ours, we pride ourselves on our educational system, and we point to an illiteracy

percentage which is remarkably low. Yes, we have public schools, they're good ones. Our kids can read and write, though one wonders sometimes, what with radio, TV, and the movies whether it will do them much good in the future.

At the same time, we deplore the illiteracy of the 500 million Chinese. Yet there's hardly a ten-year-old in that huge population who does not have a better grasp of his individual dependence upon nature than most of us here. Sure, they work hard at the job of getting along with nature, because on it depends their next meal. That is equally true of us, but—well—maybe it is exaggerating a bit to say that most of us think of milk as something that comes in a bottle, and food as something more akin to the skill of packaging artists than to the mysteries of sunlight, soil and water.

Never was there a people so prodigal with its natural resources. We exploited, destroyed and moved on. Now we are up against our last frontier. There are no more virgin soils to which we can move. Our population is exploding. We very likely will face trying times within a generation or two. We definitely will if we fail to recognize the fundamental truths which lie all around us, and act sanely. We've done a pretty poor job so far. Given a chance, our kids, and their kids, can do better.

Certainly a grave symptom of the sorry world situation is the political. We are up against an international problem that seems to have us stumped, and seriously divided, also, if we read the papers correctly. We are fearful of all-out war, and well we might be. We get the impression that the atomic bomb will make of our civilization a shambles.

I don't fear the atomic bomb. The atomic bomb can not destroy the prin-

ciples, the Christian ethic, the democratic system which has made our civilization great. We are the only ones who can destroy that.

Our international enemies can force us, however, to accelerate our exploitation of basic resource wealth. In that direction does lie disaster to all we hold most dear. But that force we can successfully resist—and we'd better get going on it, too. This third world war, we all fear, will not, in my humble opinion, be settled by atomic bombs. It will be won or lost because one or the other adversary did a better job of managing his resource wealth.

Perhaps that is a far cry from nature study, but I don't think so. We owe it to ourselves and to future generations that we achieve greater understanding of how it is man lives, the sources from which our strength comes.

Man has been given hands and a brain, and if we seriously accept the idea that man is the ultimate masterpiece of a divine power, we must accept along with that the concomitant obligations and responsibilities. To my way of thinking there is, what a learned clergyman friend of mine would call, "the moral imperative," that we behave as members of a living community, the ecological whole.

These are not things for the philosopher to debate with himself. They are matters of common sense, common understanding of common things. There is an approach to the pre-school child, the kindergarten, the grades and high school.

Nature study to me is not a class so labeled. It is less a piece of curriculum than an attitude that pervades every classroom whatever the subject. It is part and parcel of our daily life—in just the same sense as honesty, courtesy, respect for fellow man.

As I started out by saying, any subject in the broad field we might call "nature study" provides a springboard for shaping attitudes, and developing intelligent curiosity and a capacity for understanding man and his relationship to life as a whole.

It seems to me the simplest kind of logic that if we are brought up with proper perspective towards

man's place in the ecological picture, we will be capable of getting along much better within our environment. It's quite possible at the same time, we shall be better able to get along with our fellow man, and our own conscience. After all, if human life has any real purpose, it must lie somewhere along that path.

ECHO PARK DAM IN DINOSAUR NATIONAL MONUMENT IS NOT NEEDED

From Testimony of MRS. CHARLES O. MILLER, of Craig, Colorado

AT THIS time I am against the building of Echo Park Dam. The report entitled THE COLORADO RIVER states that there are 134 potential projects or units of projects and 100 of these are in the Upper Basin. Because of the limited water supply all of the potential projects can not be constructed and all of the existing and authorized projects expanded to the possible extent of their ultimate potentialities. Therefore Echo Park is not the only site for a project and it is not needed because there are more potential sites than there is water supply.

Echo Park is to be used for power. The same report states that more power is generated in this area than is consumed. Large blocks of power are exported from this area. And the report on PROJECTS states that for a number of years, energy production by the Glen Canyon unit would exceed by a substantial amount the energy requirements of the States of the upper division. Therefore, Echo Park is not essential at this time for power.

Echo Park is to be used for flood control. With two dams, Flaming

Gorge and Red Canyon, up-river on the Green and Cross Mountain Dam up-river on the Yampa, it is logical that there is little need for flood control in Echo Park.

Echo Park is to be used for hold-over-storage for river regulation. Quoting again from the report on STORAGE PROJECTS, an aggregate active reservoir capacity of at least 23,000,000 acre-feet will be required to assure upper division deliveries at Lee's Ferry. Glen Canyon will have an active storage capacity of 20,000,000 acre-feet; Flaming Gorge an active capacity of 2,950,000 acre-feet, and Cross Mountain an active capacity of 4,200,000 acre-feet. Therefore, Echo Park is not needed for hold-over storage.

Echo Park is to be used for silt control. Silt is our best soil. It is silt, deposited by the Colorado River, that has made the Imperial Valley the rich area that it is. If we are planning for future generations, we should deposit the silt in broad valleys where it could be utilized by later generations. It is stated in the PROJECTS REPORT that over a 200-year period silt deposits would reduce the active



*Looking east from Harpers Corner. Green River coming in at left center, Yampa at right top and combined rivers in foreground. Steamboat rock in center.
Looking down 2,700 feet at this point.*

capacity by about 291,000 acre-feet and the inactive capacity by 247,000 acre-feet. Why should enough silt to cover 538,000 acres a foot deep be piled up in a deep canyon where it can never be used for agricultural purposes?

Echo Park is to be used for recreation. It has been argued that a walled lake would be a great recreational attraction. But there are or will be walled lakes entirely or in part above all the following dams; Davis Dam which will back water into the Black Canyon area; Boulder Dam with Lake

Mead above it; Glen Canyon, Gray Canyon and Flaming Gorge. Another walled lake would not be unique, but Dinosaur Monument as it now stands is unique.

It has been argued that Echo Park is needed because evaporation losses would be so great elsewhere. The PROJECTS REPORT states that only a few evaporation measuring pans are located in the Upper Colorado River Basin and these do not provide data directly applicable to the remote sites at which reservoirs of the Colorado River storage proj-

ects would be located. Therefore, the Bureau has no efficient way of estimating losses from evaporation. It is just as probable that the evaporation from a large lake would be beneficial to the surrounding area in increased rainfall and temperature control as that it would be detrimental by wasting water.

Our local economy would be bolstered more by Cross Mountain Dam than by Echo Park Dam. Cross Mountain Dam is of such elevation that water above it could be used for irrigation in Western Colorado and Eastern Utah. Craig, Meeker, Artesia and Vernal would all benefit more by a stable agriculture economy than by boom conditions, if any, during the building of a dam. It has been my observation that not a great deal of business is given local towns near a dam site. The government builds houses, commissaries, theatres, dance-halls, schools and all other essentials for their workers and the builders of the dams make a self-contained unit. Tourists would have more to entice them to this area if we left Echo Park as it is, without a dam, and if Cross Mountain and Flaming Gorge dams were built. Cross Mountain would be a large open lake suitable for sailing and fishing. Flaming Gorge would be a combination walled and open lake almost as long as the combined length of the Green and Yampa lakes behind the proposed Echo Park Dam. And we would still have Dinosaur Monument characterized, to quote again, "by a notable combination of geological, scenic, biological and archeological values and by its wilderness quality." It is of national significance for the combination of its qualities; it is distinctive of its kind, and justifies its existence as a unit in the National Park system.

With new developments in soil

conservation which will reduce silt-flow, rainmaking which may change water-flow, and atomic energy which may change the power picture entirely, it is exceedingly ill-advised, at this time, to ruin the spectacular results of Nature's work of centuries when it is far from being essential to the welfare of this nation or of this area.

MORE ABOUT THOSE "LOOK AND LEARN" GARDEN VISITS

We know you've been waiting anxiously to hear just when they are to be, and where. We're sorry we could not have all the news for you in the May issue, but here it is at last. And what wonderful news it is! *Three* delightful trips through some of the charming 'one man,' (or shall we say 'one family'), gardens in Denver. These gardens are all relatively small so that the ideas we'll get from them will be the sort that the average gardener can try out without extra help. And the gardeners, themselves, will be on hand to point out their proudest achievements.

The first visit is scheduled for Wed., June 20, and will include gardens in North Denver. The second trip, on Wed., July 18 will cover gardens in the Park Hill section of the city. And the third tour will take us to gardens in Southeast Denver, including Crestmoor, the Bonnie Brae section, and even a delightful garden in Englewood. The date of this trip is August 15, also a Wednesday. On the days when the gardens are open visiting hours will be from 10 a. m. 'til 6 p. m. unless otherwise noted. This should make it possible for everyone to see them sometime during the day.

Tickets, \$2.00 for all three visits or \$.75 for each single tour, are on sale

at Horticulture House, 1355 Bannock, and at other places. Get them early. The proceeds from these visits will help to further the work of the Colorado Forestry and Horticulture Assn.

Wednesday, June 20, 1951

NORTH DENVER

Mr. and Mrs. L. W. Appeldorn, 2055 Raleigh

Mr. and Mrs. P. J. Ferretti, 2025 Raleigh

Mr. and Mrs. Phil Salter, 3440 Sheridan

Mr. and Mrs. Maurice Marshall, 3430 Sheridan

Mr. and Mrs. Hugh N. Brown, 3215 Fenton

Mr. and Mrs. Walter Oughtred, 4100 Dover,
½ mi. West of Wadsworth

Mr. and Mrs. G. F. Johnson, 2775 W. 48th

Wednesday, July 18, 1951

PARK HILL

Mr. and Mrs. L. F. Nelson, 1655 Ivanhoe

Dr. and Mrs. John Long, 1215 Monaco

Dr. and Mrs. Geo. P. Ellis, 1670 Poplar

Mr. and Mrs. G. F. Roark, 1767 Tamarac

Mr. and Mrs. Robert Ewalt, 2354 Elm St.

Mr. and Mrs. Robert More, 2215 Locust

Mr. and Mrs. Paul L. Hastings, 2960 Forest

Mr. and Mrs. Walter Slagle, 60 Dexter

Wednesday, August 15, 1951

SOUTHEAST DENVER

Dr. and Mrs. Kenneth Sawyer, 165 High St.

Mr. Martin Keul, 3618 E. Second Ave.

Mr. and Mrs. M. F. Carney, 742 S. Steele

Dr. and Mrs. Byron Cohn, 3100 Ohm Way,
Just West of 742 S. Steele

Mr. and Mrs. A. J. Horne, 1300 S. Milwaukee

Mr. and Mrs. Bill Lucking, 835 W. Quincy,
Englewood

TREEMAN'S ASSOCIATION HELPS LIBRARY

At a recent meeting of the Denver Treeman's Association they passed the following resolution:

"Whereas, the Helen Fowler Library at Horticulture House is helping hundreds of home owners as well as professional and commercial men to a better understanding of plants, plant diseases and insect pests; and whereas the following members of the Denver Treeman's Association believe a Riker Mounting showing actual insects through a glass top exhibition case will be a fine addition to the library, therefore we wish to present to the Colorado Forestry and Horticulture Association a Riker Mounting to be added to the Helen Fowler Library.

Roy L. Woodman

C. J. Wilhelm

O. E. Pearson

Roman Glowes

Robert Henry

A. F. Prante

J. K. Wirling

Carl Schulhoff

Fred C. Vetting

Roy Clowes

Earl Sinnamon

Ray Keesen

John Swingle

George A. Amidon

Henry Norden

T. R. Collier

Auction a Success

Preliminary figures show that the Auction of May 19 brought in a net amount of around \$1,100.00. Detailed report will be in July issue. We thank everyone who helped.

PLANT PERFUMES

All of us are more or less familiar with the fragrance of the rose and lilac, yet how many appreciate the fact that there is a great deal of interest in plants because of their odors. For example, the Wild Onion (*allium*), while mild in taste, has a very powerful and distinctive odor. The aromatic sumac, or Skunk Bush, as the common name implies, has a very pungent odor, not easily forgotten. Our native *Spirea* (*holodiscus*) has a very pleasant green-apple fragrance when the leaves are bruised. The root of the Vallerian of the high mountains has a powerful and lasting scent. The same is true of the native mints and sages, well known to all of us. Some botanists claim they can tell the altitude at which evergreen trees are growing by their sense of smell alone.

Yes, you can add to your out-of-door pleasures if you will learn to seek and appreciate the varied and distinctive plant perfumes.

Richards' Roses **are still . . .**



. . . incomparably better

There is Nothing Like Them in This Region!

(Several nationally-known rosarians who have dropped in on their coast-to-coast tours were kind enough to tell us there is nothing like them in the entire United States.)



Already planted and started for you, Richards' Roses are growing in large pots in specially-prepared soil, fertilized to insure rapid and permanent growth and bloom. We do not release plants until June 1. Our unique and exclusive methods of handling the plants prior to release builds a heavy additional mass of all-important feeder roots on the select 2-year Number 1 plants we start with, and we furnish about 160 pounds of the finest rose soil with each dozen roses purchased which entirely disposes of all question as to the adaptability of your garden soil to growing roses and insures your success the balance of the season.

Planting in Your Garden Is Reduced to the Ultimate in Simplicity and Ease! You Can't Fail with Richards' Roses

Richards' pioneered container-grown roses in the Rocky Mountain region and our twelve years' experience with many thousands of plants is your assurance of quality **incomparably better** than the cheap imitations frequently offered.

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Nearly 100 varieties finest 2-year budded field-grown hybrid tea roses (including all the best of recent AARS), polyantha roses, floribunda roses, climbing roses.

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In Richards' greenhouses and in Colorado's finest garden store: SO MUCH to make outdoor living and your gardening less work and more fun!

SPEAKING OF PEONIES

By CLAIRE NORTON

THE peony has graced gardens for a long, long time. Its recorded history goes back at least fourteen centuries. It has been grown in Asia and in Europe. It came to America with the early settlers, and great-grandmother had her "piney." In many an old Colorado mining camp a grass-choked clump of *Officinalis Rubra*, together with Harison's Yellow rose, the common lilac, some rhubarb and asparagus, mark the spot where a garden once was planted.



Single

When on an early June morning the peony buds in your garden unfurl their silken petals, with dew still glistening like pearls, you know you have made one of your best garden investments. For there is always something of interest about a peony planting, from the time the first ruddy shoots push through the ground in spring until the vivid autumnal foliage is cut down by black frost.

Take color of the flowers. In purest white, or white washed lightly with blush or lavender, in silvery pink, vivid cherry pinks and cherry reds, in soft creamy sulphur and sal-



Japanese

mon tones, in rosy-mauves and deepest richest reds, the peony is unsurpassed. These are all colors well adapted to mass landscape planting in larger gardens. They are equally attractive in the mixed herbaceous border of the small home garden, in combination with other early blooming perennials and with bulbs.

Or take the form of the flowers, on which a classification of peonies has been set up. SINGLE peonies show a single row of broad petals surrounding a mass of showy stamens and are



Anemone

especially good for landscape work. In the JAPANESE or IMPERIAL group the doubling process has begun and guard petals surround a center wherein the filaments and anthers have become petaloids with remnants of anthers at the tips. The form of the ANEMONE flower closely resembles the Japanese, but the filaments have become still broader and the anthers have entirely disappeared.

SEMI-DOUBLE includes flowers showing petaloids of irregular widths and sizes mixed with stamens and guard, or outer, petals which may or may not differ completely from the inner ones. This class is frequently



Crown

all embracing. The CROWN type of flower continues the doubling process, but the petaloids originating from the stamens and those from the pistils differ from each other and from the guard petals, resulting in a distinct crown. Flowers of the BOMB group show still broader petals, but these and the guard petals differ.

SEMI-ROSE blooms have petals of uniform width, unlike the Semi-Doubles, but also have stamens mingled with the central petaloids. In



Bomb

the ROSE type doubling has been completed, giving a flower with uniform petals without stamens in evidence. It is in this class that much of the modern hybridizing has been done.

In addition, there are the various botanical species, of which varieties of *Paeonia officinalis* and *P. tenuifolia* are commonly offered, and the gorgeous tree, or Moutan, peonies. These last, while probably hardy enough for us, are so costly as to be rarely seen in home gardens. *P. tenuifolia* and its double, or *flore-pleno*, variety are called the Fern Leaf Peonies. They are quite unlike any of the modern hybrids, with their finely cut, feathery foliage and bloom very early, weeks ahead of the hybrids. Coloring of the



Semi-rose

flowers of both the single and double forms is a pleasing soft red. The old fashioned *P. officinalis*, in double red or white, can usually be counted on for Memorial Day bloom.

Finally, take ease of culture. Once correctly planted, your work is over for a great many years. The peony is not a plant for the casual gardener, to be dug up and moved about indis-



Rose

criminately. It requires two or three seasons to become established in its new home, but after that with a minimum of care it will thrive and bloom for most of a lifetime, increasing in beauty of flower with each passing year.

A permanent location should, therefore, be decided upon before peony roots are purchased. To give their best, peonies must be permitted room to grow unhampered by invasive grass, shrub and tree roots. Ample space between plants must be left for normal development when used in mass planting. Overcrowding with other perennials should be avoided in the mixed border.

An ideal location is one where the soil is well drained and where sun can

be enjoyed for a part of the day. Partial shade cast by trees and shrubs at some distance is desirable through the midday heat, and even essential to prevent fading or burning of more delicately colored and red blooms, but full shade and a damp, poorly drained situation they will not tolerate.

Peonies will grow in any adequately drained garden loam. A neutral soil on the clay side is to be preferred to one very sandy or one excessively acid in reaction. They do like a fertile soil, and since they will long remain in the same position in the garden careful preparation before planting is necessary to long-term results.

The hole into which a peony root is to go should receive just as thorough attention as for planting a shrub. The ideal method is to open a hole at least two feet deep and two feet in diameter a month before the planting date, which with us falls in October. If subsoil drainage is poor, placing rock rubble in the bottom of the hole is to be recommended. Above this should go a soil mixture rich in nourishment upon which the roots, as they lengthen from season to season, can draw. The best soil mixture is material from a compost pile where equal layers of heavy soil, sand, rotted stable manure, granulated peatmoss and leaves or grass clippings, have been prepared the year before. In lieu of such compost, well rotted stable manure and top soil can be mixed in equal parts.

Fill this soil mixture to within ten inches of the surface, fork over several times and tamp lightly. Over this should go fine top soil to which bone-meal, but no manure, has been added, and mounded up to allow for natural settling. Manure should, of course, not be in direct contact with the newly planted roots. A spring and



Peony, Marie Jaquin. Photo by K. N. Marriage.

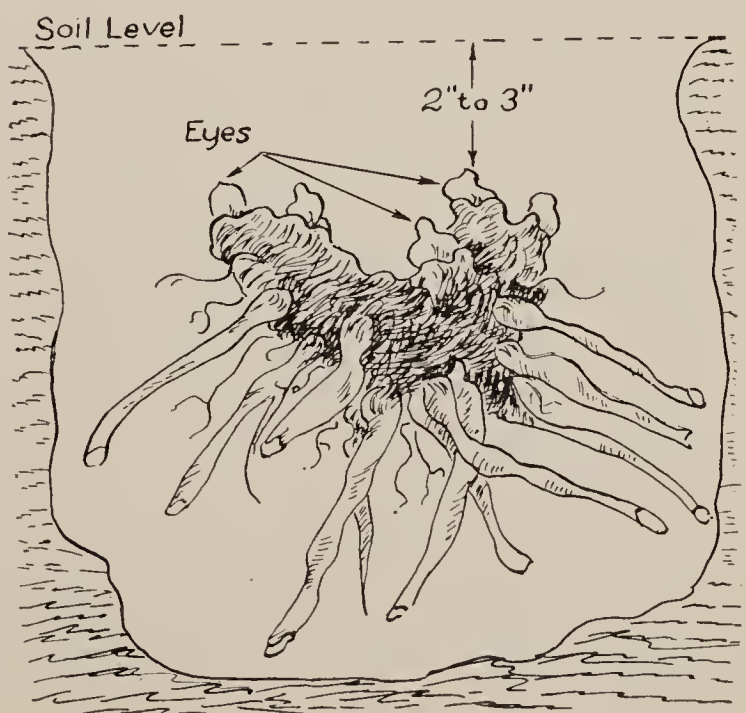
fall top dressing of old, well rotted, strawy manure around the plants provides them the extra food needed to carry them through the year. Occasional feedings of liquid manure are sometimes resorted to for production of still finer flowers. During periods of prolonged drought water will be needed, but water should never be applied directly to the fragile-textured flowers.

The peony begins growth very early in the spring and continues growing vigorously until late fall when it becomes comparatively dormant. Fall, rather than spring, is the best time for planting. A standard three-to-five-eye division grown on for one year in a nursery is considered the best stock for quick and permanent results. A small division takes too long to become established. A large two- or three-year-old clump planted intact is equally slow.

In a heavy soil these divisions should be set so that the eyes or buds will be two inches below the surface. Three inches of soil covering can be allowed in a very sandy, light soil. Peonies planted too deep seldom if ever bloom correctly; they may refuse

to bloom at all. Too shallow planting increases the danger of injury to the buds and of heaving during alternate freezing and thawing winter weather. Scooping out enough soil to receive the division in the upper ten inches of the prepared hole and building a mound on which the heavy body of the root can rest facilitates setting at the proper depth. The smaller, trimmed roots are spread out over this mound and the earth firmed about the roots and over the crown.

Peonies form several buds to each



blooming stalk. To obtain a few perfect blooms instead of a mass of flowers, the terminal bud is selected on each stem and side buds removed when about the size of peas (Fig. 9). Flowers may be cut when the outer petals begin to unfold. As little foliage as possible should be cut with blooms. Forming seed pods should be removed immediately after the petals are shed, both for the sake of neat-



Fig. 9

ness and vigor of the plant. After frost kills the foliage in autumn, cut stalks off at the surface and burn to prevent any possible spread of disease.

The peony has few diseases and few enemies. Bud blighting is probably the most serious, and is largely prevented by sanitation and by spacing the plants so air currents can freely circulate about them. Spraying the young shoots in spring with bordeaux mixture is also recommended, as is control of ants which may carry the disease from diseased to healthy plants. Dusting with 5% Chlordane about the peony plantings gives good ant control.

If you plan any new arches and pergolas, build them now, on nice days.

STUDYING GARDENS CAN BE GOOD FUN

Summer Landscape Classes

Green-thumbers who are looking for new garden ideas and ways to improve their gardening will be interested in a special summer class to be offered at the University of Colorado's Extension Center in Denver, 1405 Glenarm Place.

M. Walter Pesman, well-known Denver landscape architect, will teach the special class which will begin June 20. Anyone may enroll for the course.

Pesman, formerly victory garden editor of the Rocky Mountain News, has studied landscaping and land planning extensively throughout the United States and in many European countries. He is the author of *MEET THE NATIVES*, a guide to Rocky Mountain trees, shrubs, and flowers. He is leading consultant for several Colorado city and county zoning committees and has served as president of the Denver housing committee, the Colorado State Forestry Association, and other organizations.

The special class in how to improve your garden will include evening lectures each Wednesday, and outdoor inspection tours of outstanding Denver gardens each Saturday afternoon. Further information about the course may be obtained at the Extension Center or by telephoning CHerry 7404.

CALLING ATTENTION TO GARDEN TOURS

Take note books and pencils with you on your garden tours this year, observing any changes you wish to make in your own gardens and give special study to height of plants, association of foliage and color harmonies.

H. F.

WHAT TO KEEP IN YOUR MEDICINE CABINET FOR THE GARDEN

M. WALTER PESMAN

ROTENONE kills a great variety of pests, paralyzing them. It also acts as a stomach poison for chewing insects. Rotenone dust should contain at least 0.75% rotenone. It is nonstaining and nonpoisonous to human beings.

PYRETHRUM kills many insects by paralysis; must hit the insect. Nonstaining and nonpoisonous. Pyrocide dust is good.

BLACK LEAF 40 is a nicotine sulfate spray for sucking insects; particularly effective for aphids. Stains flowers; nonpoisonous.

DUSTING SULFUR is particularly good for red spider, mites, and for tomato psyllid. Use it to control rose mildew, and some other diseases of ornamentals. Best in warm weather.

CHLORDANE 5% DUST is a good contact and stomach poison for ants and other underground pests. Slow-acting. Many trade names.

DDT 3% DUST kills leaf hoppers, plant bugs, rose chafers, thrips, but safeguards red spider and aphids by killing their enemies. Do not use on anything edible.

2,4-D is the best and safest weed killer for dandelion, chickweed, plaintain, knotweed, white clover, buttercup. Does not kill bluegrass. Keep separate sprayer for it.

CRABEX and ZOTOX are caustic arsenic compounds designed to kill crab grass; kill some of the lawn grass too. Dangerous to children and small animals.

CHEMICAL FERTILIZERS are good for a quick start in early spring, and can be used throughout the season together with organic matter, such as peat moss and manures. Vigoro illustrates them.

PLANT PROD and HY-GRO are powders for liquid fertilizers.

BORDEAUX MIXTURE is the accepted remedy for plant diseases caused by fungi. For spraying or dusting.

SEMESAN is a seed and bulb disinfectant to destroy disease organisms and reduce damping-off.

Many, many trade products are in the market, but they are based on the preceding constituents.

THIS TREE WAS PRESENT WHEN CIVILIZATION BEGAN

The oldest and biggest tree in the world grows in southern Mexico according to the National Geographic Society. *El Tule*, as it is called, has branches spreading out over a diameter of 150 feet. It takes twenty-eight people stretching out their arms and touching fingertips to encircle it; in other words, the circumference of the trunk equals this 150-foot diameter of the branches.

But, runt that it is, it is only 140 feet tall, less than the giant redwoods in California.

This giant cypress was worshipped, along with a number of its brothers, by the Indians of the region. When the Spanish came in 1519 they could only think of cutting them down as idols. But *El Tule* escaped luckily. It is between 3,000 and 6,000 years old, dating back to man's earliest civilization.

M. W. P.

GARDENERS IN OTHER PLACES

By JOAN PARRY

THE gardens of Colonial Williamsburg have been reconstructed in the most faithful and detailed manner possible, so that today they appear almost as they were created in the eighteenth century.

These gardens were much influenced by the prevailing fashion in England during the first half of their century, but they were mostly influenced by the Virginia climate, and developed very definite characteristics of their own. The English influence most readily recognized is the general utility of the garden, for within its narrow space vegetables and fruit as well as flowers find a place.

The houses were usually located directly on the street, so that all the

space within the half-acre lot—the amount of ground for each house established by statute—behind the house could be fully utilized. On the Duke of Gloucester Street, the main street of the city, the lots were uniformly 82½ feet by 264 feet deep, and contained the outdoor kitchen and its attendant paved work areas, together with the pleasure, herb, kitchen and fruit gardens and the stable area. Every foot of space was necessarily used, but invariably the whole was planned for beauty as well as for utility.

Apart from the custom of building the kitchen and other service units separately from the house, the Virginia gardeners developed other fea-

Brick paved, box edged borders, showing topiary work. Elikah Dean garden.





Brick path, grass and hedged parterre of the George Wythe house garden.

tures dictated by the climate. The use of shade trees to protect them in summer was different from the English custom of allowing as much light and sun by the house as possible, but perhaps the most important difference was in the choice of plant material.

Many of the plants the colonists tried to introduce from England failed in the hot, dry Virginia summer. Of these, English yew was perhaps their greatest disappointment, but box was an abundant compensation, thriving there luxuriantly. Some immigrant plants succeeded so well, however, that they naturalized abundantly as garden escapes—the common daisy, bouncing bet and daylilies; others, such as periwinkle, barberry and lilac settled happily and permanently.

And there were other compensations beside box; the Virginians eventually discovered the great wealth of

native material. For trees they had the live oak, the American elm, the sycamore, the sweet and sour gums, holly, magnolia, dogwood, redbud, red cedar and pine. Among shrubs the viburnum, bayberry, cherry laurel, mountain laurel, yaupon, cassine and sweet bay; among flowers the foam flower, butterfly weed, goldenrod and azaleas, and among the vines the coral honeysuckle, cross vine, clematis and scuppernong grapes.

Today only those plants that were known in the eighteenth century are grown in the reconstructed gardens, and it is amazing what a wealth of material was then available.

The garden paths in Williamsburg are mostly of brick and marl, containing much oyster shell. It is easy of maintenance and pleasant to the eye, and has the added advantage of saving the constant upkeep required by grass.



Well-head with native Wisteria in the Orlande Jones Garden.

The picket fence, which is another essential feature in these gardens, was erected by ordinance, and was a development of the stockades erected by the first colonists at Jamestown against wild animals and surprise attack. Although they do not give privacy to a garden they do outline both the boundary and inside design.

It is a curious habit among gardeners to ignore native material, and go to endless trouble to persuade plants from other climates to furnish their gardens. Williamsburg is a great example both of the use of native ma-

Peach trees and the fig-bordered vegetable garden of the George Wythe house.



terial, and of well-designed small lots similar to those provided with the average house of today. The main underlying thought behind all Williamsburg reconstruction is that the present may learn from the past, and certainly gardeners today can learn much from these eighteenth century gardens. They were created in the greatest period of garden history, and are famous both for their beauty as well as for their utility.



White picket fence, and box in the George Tucker house garden.

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A New Garden Novel OLD HERBACEOUS

They called the crusty Bert Pin-negar, "Old Herbaceous," when they thought he wasn't listening. He was fifty years on God's green earth, always a gardener and if he made the earth a little greener, that was all that mattered.

This is the story of a gardener who first sold wild flowers and won prizes. He was later a judge of flower shows all over the country. Finally he found himself a village institution, the symbol of a more gracious era with no place to go. Anyone who loved the country of "Mrs. Miniver" will love the author's country, too.

This fine book is just off the press. The creator of this delightful story, Reginald Arkel, is best known for his love of the country. He is the son of a farmer and has written many musical plays for the theatre. He has founded half-a-dozen magazines and edited many books of light verse. His picture is in front of me as I write. He is good-looking, with a searching eye, of medium age, wears English tweeds and smokes a pipe. You will feel all of these facts as you read this unusual, wholesome story.

The critically discerning John Kieran writes, "What a great pair of cronies OLD HERBACEOUS and MR. CHIPS would make." The lead-

ing character in this book is not peculiar to any particular countryside, for wherever there is a garden, there you will find OLD HERBACEOUS.

HELEN FOWLER.

Donors To The Library

Books on the way to the Library from The University of Oklahoma Press. Louis Bromfield says, "This Press deserves special praise for the fine list of stimulating and valuable books on all phases of agriculture and horticulture which it brings out from time to time." Of special interest to agriculturists:

The Farmer's Handbook, by John M. White. Has the scope of an encyclopedia, the usefulness of a handbook.

The Business of Farming, by DeGraff and Haystead. On the proper administration of agricultural ventures.

Vertical Farm Diversification, by D. H. Doane. A practical solution to the farmer's biggest problem—making a profit all the time.

Pigs: From Cave to Cornbelt, by Towne and Wentworth. Bromfield in The New York Times: "A book which certainly every farmer—city or dirt—should have."

Mineral Nutrition of Plants and Animals, by Frank A. Gilbert. The "hows" and "whys" of avoiding "hidden hunger."

Deserts on the March, by P. B. Sears. A prize-winning book.

Plowman's Folly, by E. H. Faulkner. Successful farming techniques without plowing.

A Second Look, also by E. H. Faulkner. A re-examination of the theories advanced in *Plowman's Folly*.

H. F.



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BIRDS IN OUR GARDEN

By RUTH ASHTON NELSON

REPORT of progress: The lawn has been planted with much patient raking and the help of the robins. How busy they have been seeking grubs and other insects in the freshly stirred earth! They have accepted the hospitality of our new garden and are making themselves at home around the large flower-pot saucer set under the drip of a hydrant. Sometimes I think they prefer that arrangement to the more formal birdbath which stands between some young pinon trees, although they have begun coming to it also.

Some time ago the busy little pink-sided juncos went on their northward way. But the white-crowns are still singing from roadside bushes, the meadowlark's song comes from the fields beyond the park and house finches carol from our neighbors' grown-up trees. Our own young ones don't offer much in the way of vantage points as yet. Recently we've seen mourning doves evidently home-hunting in the leafless branches and now their persistent cooing is an almost continuous sound. A highlight on April twenty-third was the song of the ruby-crowned kinglet heard from a white fir tree in the park. Three high, thin notes followed by the silvery song brought joyous memories of many fragrant, sunlit forests.

If we wish we can bring more life and color into our gardens by growing plants which will attract birds. Humming birds visit most of us without special invitations but they can be induced to come oftener and spend more time if their favorites are planted. They will feed from all flowers which have tubular, nectar-bearing

corollas. Their long, flexible tongues can be thrust into the spurs of columbines or the long tubes of honeysuckles. It is believed that they are particularly attracted by red flowers although in the central rocky mountains we see them commonly around blue flowers, for the simple reason that blue is a more frequent color here. So the red penstemons and columbines, scarlet honeysuckle and fairy trumpet (*Gilia aggregata*), are good garden subjects for this purpose. I have often seen the hummers sipping from the blooms of our native penstemons, riding their invisible elevators up and down before the flower



stalks. The perennials, *P. glaber* and *P. alpinus*, are very easily grown in the garden. Delphiniums, both the natives and the large garden varieties, and the beebalm or horsemint (*Monarda*) are also favorites of these tiny, fearless birds.

Seed-eaters may be encouraged by plants of the sunflower and chicory families. Goldfinches and pine siskins are especially fond of the seeds of such annuals as bachelor buttons, coreopsis, zinnias, gaillardias and sunflowers. If such plants can be grown where the dry stems and ripened heads may be left undisturbed until winter they will afford both shelter and nourishment to these little fellows during autumn storms.

When robins and other fruit-eating visitors compete too seriously for your strawberries or cherries, try planting mulberries (where they are hardy), pin cherries, elder berries, service berries, wild currants and gooseberries in unused corners and shrubby borders. They will serve as a diversion and in some cases the birds really prefer them to the cultivated fruits. Of course there are many interesting shrubs which may be planted to furnish food for winter resident and visiting birds, but that is a subject for another time.

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KOREANSPICE VIBURNUM

THE accompanying pictures were taken of the excellent specimen of *Viburnum carlesii* growing along the north wall at South High School,

Denver. There were two plants set out here several years ago when the school was new by Mr. Pesman who was then landscape architect for the Denver Public Schools. The protected locations on the east and north have suited these plants well. Residents of the area look forward to the fine display of flowers with their delightful fragrance every April.

In an exposed location these shrubs are not very hardy, but where they get only part sun and are screened from severe winds they give a display equalled by few other shrubs.

The flowers open before the leaves are fully expanded. They are in large clusters, showing pink in bud and white when open. The fragrance is compared to the trailing arbutus.

These pictures taken by C. Earl Davis.





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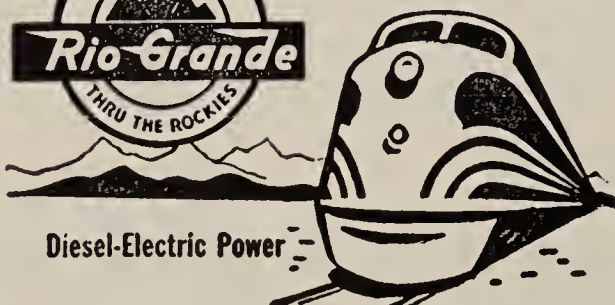


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JUNE GARDENING

FINISH planting out tender annuals early this month. Clumps of perennials may be planted at this time if they are not too nearly in bloom. Some of the nurserymen carry roses, various perennials and even a few shrubs and vines in pots which may be planted out at any time.

* * * * *

Shrubs which have bloomed may be pruned now. Do not shear back the Bridal Wreath Spirea and such naturally arching habit shrubs. Flowering Almond and the early Garland Spirea should be sheared back to keep them from becoming thin below as they grow older.

* * * * *

Do not remove all the suckers from around Lilac Bushes. Leave a few of the most vigorous to form new growth to cover the bare stems of older growth. Some of these very old stems may be taken out down to the ground each year if a young vigorous looking bush is wanted.

* * * * *

Watch for suckers of Wild Plum coming up from below the graft in Flowering Plum and Flowering Almond. These can usually be identified from the different shaped leaf and more vigorous growth. If these suckers are not removed they will gradually choke out the better double-flowering grafted top.

* * * * *

As the new plants begin to grow the weeds begin to grow even faster, for they were there first. A little work when the weeds are very small will do more good than much work later. At the same time that weeds are eliminated the surface of the soil around trees, shrubs, perennials and annuals can be broken where it has become compacted from watering or tramping. Where there is no chance to damage valuable plants the 2,4-D weed killers may often be used to advantage, but this material is dangerous if it drifts on to good plants.

* * * * *

June is the month when insects may take a heavy toll. Here, as with weeds, "a spray in time" is worth more than the later attempts to eliminate them after they have done considerable damage. Continue habit of checking the Spirea, Spruce, Delphinium and Juniper for aphids. Be on guard, especially with the evergreens, for the damage done usually does not show up until weeks after the insects have come and gone. If there are caterpillars, beetles or other chewing insects damaging the plants they should be controlled with a stomach poison such as arsenate of lead or one of the new insecticides like DDT or chlordane.

* * * * *

If the garden has had normal watering up to June it should be in good shape. Start now training the plants for the hot weather to come by watering them thoroughly at each time but less often. Newly transplanted things will need a little extra attention.

* * * * *

If fertilizers and mulches have been applied as needed early in the season, little need be done now. Later, when trees, lawns and flowers slow up they may be given a little "shot" of some quick-acting fertilizer.

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July, 1951

The Green Thumb

COLORADO'S GARDEN MAGAZINE



THIMBLEBERRY

Picture on front cover.

THIS is one of our most valuable native shrubs. When the native plants are in bloom along our canyon roads they come close to rivalling the flowering dogwood of the east and south.

The blooms resemble single white roses. The habit of the shrub is neat, somewhat similar to spirea. They are very adaptable to cultivation, their chief fault being that they sometimes become overgrown with the extra care of good soil and plenty of water.

An unforgettable effect could be had by planting many thousands of

these shrubs along our state highways. They are also excellent for planting around mountain homes as well as in city gardens.

The botanist and horticulturist have had a hard time deciding exactly which is the correct name for this plant. The Standardized Plant Names now calls it Boulder Raspberry, *Rubus deliciosus*, but we find it difficult to call it anything else but Thimbleberry.

This excellent picture was taken by Charles J. Ott.

CARE IN USE OF 2,4-D NECESSARY

From Shade Tree Digest, Presented by
Swingle Tree Surgery Co.

2,4-D, like fire, is a useful tool of man if used properly, but an agent of destruction if it escapes control. During the past several years there have been an increasing number of tree and shrub injuries traced directly to careless or improper use of this selective weed-killer.

Commonly used to control weed growth in lawns, 2,4-D injury to nearby trees, shrubs and flowers may occur in three different ways: (1) direct splash or mist drift, (2) vapor drift, and (3) root absorption through the soil. Splashing or inadvertently spraying tree and shrub foliage with 2,4-D is simply carelessness that can be controlled. Mist drift frequently results from the use of improper equipment, or application during windy weather. Some of the 2,4-D compounds are highly volatile and although applications may be carefully and correctly performed, vapor arising from the drying chemical may be potent enough to cause injury to

foliage. There is considerable controversy concerning the possibility of root absorption through the soil. There is evidence, however, which indicates that injury in this manner may occur through drastic overuse or too frequent applications whereby the soil becomes liberally soaked. Such heavy applications are not, of course, in accord with manufacturers' directions, but sometimes are made on the fallacious theory that "if a little is good, a lot is better."

2,4-D has gained wide repute, and rightly so, as a selective killer of plantain, dandelion and other broad-leaved weeds in lawn areas. But for safety to nearby trees and other ornamentals, it is essential that the right kind of equipment be employed when the chemical is applied. Furthermore the operator should be thoroughly familiar with the various 2,4-D compounds and able to select the type best suited for the particular job involved. Most important of all, it should be borne in mind that 2,4-D is as toxic to all broad-leaved plants and to many evergreens, as the most deadly poison is to man, and should be handled accordingly.

The Green Thumb

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JULY, 1951

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JULY SCHEDULE

July 7-8, Saturday P.M. and Sunday.
Trip up South Boulder Creek from East Portal. Leave Horticulture House at 2 P.M. Freida Vanderwahl, leader.

July 14-22. Backpack trip into the beautiful Snowmass-Maroon Area. Heavy equipment taken in by horse. Walking around 10 miles a day. Cost about \$80.00. Register by July 10, and get further particulars from Anna Timm, leader.

July 18. Wednesday. Park Hill Look and Learn Garden Tour, 10 A.M. to 6 P.M.

July 29, Sunday. Butler Gulch flower trip. Leave Horticulture House at 8 A.M. Betty Miller, leader.

August 4-5, Saturday P.M. and Sunday. Climb of Mt. Meeker, led by Margery Shepard. Leave Horticulture House at 2 P.M. Take overnight equipment.

CAST YOUR BREAD UPON THE WATERS

One of the nicest things that has ever happened to this editor is the sudden movement to help buy a new car to replace the old Plymouth station-wagon which was about ready to drop out of sight like the "one horse chaise." When Mrs. Fowler's

basket was announced at the auction someone suggested that it be the start of a fund to buy a new car, as the old one was very conspicuous at the time. This \$100.00 raised by the basket has been the nucleus for a snowball of donations which enabled us to pay about one thousand dollars down on a new Chevrolet Suburban car. This is now in use. It will carry up to ten people (if they are not too large), will carry five or six and baggage or will easily sleep two people. It is built like a truck with extra heavy tires and low gear yet looks good and will make good speed on the road.

It should be of service for many years to come.

We have been severely criticized in the past for spending so much personal money on the Association's work and not saving up to buy a new car. This policy may not be good business but it now seems that the work of the Association has been promoted when it was needed and a new car has come forth when it was needed.

John Swingle, Mrs. George Garrey and Helen Fowler have been especially active in promoting this project.

We feel like we had had a whole flock of Christmases rolled into one. Surely these Horticulture House people are the finest in the world.

GEORGE W. KELLY.

DID YOU HAVE WINTER KILL?

WILLIAM H. LUCKING

TO USE the term winter kill is hard words. Just what is it? What causes it? A lot of factors enter into the term winter kill. Some will say the winter was too dry, others will say it was too cold. Again, you will hear that the sap stayed up too long. But when you analyze all these facts it adds up to just one thing, the sudden change of temperature and that is just what happened this winter.

If you go back to last October, you will remember it was a very warm dry month, most flowers especially the roses were all in full bloom, then along comes the 10th of November and it went to 8 below zero. That is just too much of a sudden freeze for plants to take that are not dormant. At the time of this freeze there were very few plants that were dormant.

Plants like Lilacs and others make their buds early and go dormant even though they stay green. Plants

of this type do not winter kill easily. On the other hand plants like Roses, Privet, Spirea, Chinese Elm and others keep on growing late, do not



"Big Bill" Lucking is probably the highest authority in the Rocky Mountain Area on plants and planting for our "peculiar" climate. While laid up with a serious injury he has consented to write us these short stories on timely topics.



go dormant quickly, and are subject to winter kill.

A very dry fall and winter may cause some winter kill, but this kind of a kill is far different. It is caused from the lack of moisture not a freeze. When plants go dormant early in the fall you very seldom have any winter kill. When you get these sudden hard freezes like the one in November and again the first of February where it went to 25 below zero, you can always look for some winter kill.

A SMALL ROCK GARDEN

WILLIAM H. LUCKING

HAVE you a corner or nook you do not know what to do with? This is a grand place to put in a small rock garden. One can sure have a lot of fun and get a lot of enjoyment from it. There are plants that you can put in a rock garden that belong nowhere else.

The first thing when making this rock garden is to select the place in a corner or next to a back fence by the garage. I think the most suitable place is the back yard. Here you can build and plant your rock garden to suit yourself. Make a mound of earth in an irregular shape, using native rock with some lichen on them. Do not use too small rocks and place these rocks so they will form pockets.

Be careful that you do not use too many rocks and make it look just like a rockpile.

Now after you have built your rock garden, comes the fun of planting it. You will want to plant it with all low growing plants if it is in the sun. Plants like Alpine Aster, the low Campanula, Muralis creeping Phlox, Dianthus deltoides, Gypsophila reptans, Prunella, Rock roses, Sedum, Veronica incana, Veronica rupestris. If in the shade, such plants like Ferns, Primrose, Funkia, Lily-of-the-Valley, Sedum, Violets, Viola. Some of these varieties may be hard to find locally but, if you shop around, we think that most of these varieties can be found.



These pictures are from the Deffenbaugh garden in Golden. While this garden was not built by Mr. Lucking it serves to illustrate his points.

TO EVERGREENS THAT ARE IN TROUBLE

JUNIPERUS SCOPULORUM AND PONDEROSA PINE

WILLIAM H. LUCKING

IT IS heartbreaking to see all of the Juniperus Scopulorum (Silver Cedar) that are dead all over the city this spring. The Scopulorum will be a thing of the past if the red spider and aphids are not controlled. The Aphids are far more damaging. Aphids are small soft bodied insects that suck the sap from the small limbs of the Scopulorum. Spiders feed on the foliage.

Now to the killing of the Cedars last winter, if you go back to the month of October, 1950, you will remember there was a temperature of 80 degrees and more, and very dry. This was just ideal for the breeding of aphids and spiders. In the parks we noticed that there was some brown

showing on the cedars at that time. When looking close we found the worst infestation that we have ever seen. You would think at that time of year it would be safe to forget the cedars and not spray any more. Well, here is what happened, we sprayed, but in most cases it was too late, the aphids had a grand time feeding and sucking the life out of the Cedars making them very weak going into the winter, so what the aphids did not kill the winter did.

There is only one answer; to get everybody to spray at least two times, maybe three, a year. If the aphids and red spider are not controlled, there is a chance of the Scopulorum not being planted any more.

The Ponderosa Pine is another evergreen that is having its troubles. In this case it is not aphids or red spider. Of course wooly aphids and red spiders will attack pines, but here we have a fungus that is giving no end of trouble. This fungus seems to start on the tip end of the needles, turning the needles yellow then brown. Sometimes it will take a branch at a time, then again it will start all over the tree. So far there has been no control for this fungus. It has come to be very serious here in this territory. If you are not familiar with this disease you can see a good example of it on the south side of the Lake Junior High School.

The Ponderosa Pine is a native of Colorado, but does not seem to do well here in this Denver territory. I would like to see some research done on this disease.





PLANT BREEDING POSSIBILITIES AND TECHNIQUES FOR WESTERN HORTICULTURE

DR. S. W. EDGECOMBE

Head, Department of Horticulture, Utah State Agricultural College, Logan, Utah

THE title of this paper takes in a great deal of ground. Obviously, one cannot cover the entire field, but I think one can point the way, as one might say, for those who wish to do something to improve the plants that are now being grown in the Inter-Mountain region. Probably the place to start from is to get a clear idea of the plants now being commonly grown by gardeners. This stock taking should be detailed. One should know the characteristics of each type of plant, its good points and its failings. That means that if there are 30 varieties of some particular plant, one should know the whole story about each variety. Also, one should learn the same information about any other species of this same group of plants that might be grown in the area. (It will be necessary to talk about genera, species and varieties in this paper; hence a series of definitions are necessary. We say that a species of plant is a group of plants that have certain botanical characters which are common to the group. Often there are several species which have a similar botanical character, but differ in certain botanical characters. These species are grouped into a genus. Two or more genera are termed a genera. Groups of plants which have similar specific characteristics but which have a definite small difference are termed varieties. In horticultural plants, there are many named varieties which have no real botanical difference, but which are distinguished from each other by color of flower, shape of flower, num-

ber of flowers, or type of growth. Often there is as much difference between certain varieties in some species as there are between certain varieties in other species. Nevertheless, this terminology of genera, species and varieties is a useful method of classifying plants and talking about them.)

Sometimes the species that cannot be grown in the area are of great value to the plant breeder because they have certain characters such as more abundant flowering, resistance to insects, diseases or environmental conditions which would be valuable if they could be incorporated into the species that can be grown in the area. Many times we find that certain species have hardiness. That is that they are resistant to the peculiar soil, and climatic conditions in the area. However, they may lack the beauty or vigor of growth of some other species that cannot be grown in the area because of their lack of hardiness.

When this happens, the plant breeder, by crossing the hardy species that can be grown in an area with the species or variety which cannot be grown can combine the good qualities of both into a plant that can be grown and which is superior to both of its parents. We talk of this process as hybridization in the first place. After the cross has been made and seedlings are produced, they are termed first generation plants. If the plant we are working with is one that is only propagated by seeds, it is necessary to purify the strain. If the plant is one that is usually propagated by

vegetative propagation then we do not need to purify the strain but we can select a plant in the first generation which has all the desirable characteristics and propagate it. This is one advantage of vegetatively propagated plants. The breeding process is sometimes more difficult but the selection of the ideal plant is easy since it can be propagated in the impure form.

Seed reproduced plants present more of a problem as far as making selections are concerned. The first generation plants are all identical in genetical constitution when the two parent plants are pure for any group of characters. There may be some minor variations in size and form of the first generation plants. These variations are not due to the genetic or chromosomal makeup of the plants but are due to the environmental influences such as soil, water, etc. Selection in this generation is of no value with such plants. With such plants, it is necessary to save the seeds from the first generation plants and sow them. These seeds will produce plants which are termed second generation plants. It is in this group of plants that one makes selections. In this second generation due to the recombination of chromosomes and genes, one has an opportunity to select out plants that combine the good qualities of each of the parents. Theoretically, all the possible combinations of genes that were present in the two parents will appear in some plant if one grows a large enough population.

We have talked about the genes, chromosomes, and characters. Each plant or animal has a definite number of chromosomes in the body tissue. This number is called the somatic or diploid number of chromosomes. These chromosomes are in the nucleus of the cells and they are the only

part of the cell that is involved in the inheritance of an individual.

When the plant forms a pollen grain or an egg cell in the ovary of the flower, a somatic cell becomes a specialized cell. This specialized cell undergoes a special type of division in which the chromosomes line up in pairs and a member of each pair is distributed to each one of the daughter cells. These daughter cells then have half the number of chromosomes that the parent somatic cell had. We talk about these reduced number of chromosome cells as haploid or sex cells. All normal pollen grains and egg cells have this reduced number of chromosomes or are in a haploid number. When an egg cell is fertilized with the male haploid number the somatic or diploid number of chromosomes are in a haploid number. When an egg cell is fertilized with the male haploid number the somatic or diploid number of chromosome is restored since each of the egg cells and the male cells have a haploid number.

The new individual from this fertilization has the original somatic or diploid number of chromosomes and when its cells divide to form new cells each of the individual chromosomes divides into two equal similar chromosomes. Thus every somatic cell in a plant contains the same number of chromosomes as every other cell in the body tissue of the plant. However, when sex cells are formed by this plant this somatic number is reduced by half since the chromosomes that are alike pair and one member of each pair is passed on to the new sex cells.

This fact of separation of members of a chromosome pair during the production of sex cells is one of the fundamental things that we need to understand in breeding plants. Also we need to know that they are recombined in the new individual when the

egg and male cells unite to form a new individual.

The genes which are discussed in plant breeding we know are located on the chromosomes in a linear order. With some plants so much research has been done on them that the plant breeders know in what portion of the chromosome the genes are located. This is particularly true in tomatoes, corn and a few other plants. In most of the horticultural plants that we are interested in, we do not know near this much because not much work has been done on them and also because some of them are very difficult to work with.

We have mentioned characters in plants. Tall habit of growth or a certain type of flower color are good illustrations of characters. Characters are the end result of genes in relation to environment. Characters may be due to the action of one gene or many genes and again sometimes several characters may be the result of one gene. Until the relationship between genes and characters are carefully worked out by the plant breeder or geneticist, no one can be sure just how many genes may be involved in the production of a character.

I have gone into these three terms, genes, chromosomes and characters because one has to know something about them before they can breed plants to the best advantage. Where the character that you want to incorporate into a new plant is due to only one gene it is very easy to do this.

You make the cross between the two varieties of plants. Grow the seed and secure the first generation. If the character is one that is recessive then you cross one of the first generation plants back to the parent that had the character that you wanted to transfer. This technique of crossing is termed a backcross.

Theoretically and practically, this is the method of transferring a single gene from one line of plants to another. The flower breeders in particular use this method a great deal when they have a desirable character to transfer to the commercial varieties.

I have mentioned a recessive character. It is a character that is not apparent in a plant when it is in an impure condition. A dominant character on the other hand is one which is apparent even when it is in an impure condition. If a new character is due to a dominant gene one can backcross to the parent that showed the character in the first place, but usually it is better to self the plant and save only the plants that show this dominant character in the next generation. We know that one fourth of the plants in the second generation will be pure for this dominant character, one half will be impure and the remaining one fourth will be ones that show only the recessive to the dominant character.

Theoretically only 4 plants need to be grown in the second generation to secure results with a single gene. If two genes are involved in the production of a single character 16 plants are necessary to get all possible genetic combinations, if three genes then 64 plants are necessary. With some characters such as wheat stem rust where the breeder wants to get resistance to the rust and also high yields of marketable wheat there are many, many genes involved. Under such conditions, it is necessary to have as many as 15 thousand plants in the second generation. This large number is necessary in order to have all possible combinations in the second generation so that you may make every possible selection of plants.

A few plant breeders who are not familiar with the above facts grow

small numbers of plants in the second generation, save seed of some of them and then grow a similar number of plants in the third and fourth generations. They think that they will find plants in these later generations which will be different from those that they grew in the second generation. All this takes time and is unnecessary because if you grow enough plants in the second generation, all the possible combinations of characters and genes will appear in the second generation.

So far I have gone into considerable detail concerning crossing. I have mentioned selection in the various generations. Plant selection is one of the hardest things that a plant breeder has to do. The reason Luther Burbank produced so many good things in such a short time was that he had an uncanny way of selecting out plants that had value.

A great deal of very good breeding has been done in horticulture by following only the selection method. Let me illustrate how this may be done. You could go out into the mountains or on the prairies of this region and collect seed of *Amelanchier* (Juneberries). You would carefully pick fruit from the largest shrubs or those that had fruit of the type that you liked or some other character. Then you would plant the seeds in a flat or nursery row. I am sure if you made collections from many areas you would find a great variation in the plants that came from the seeds. Probably some of the seeds would produce plants that were very weak. In general you would discard these because they would lack vigor and would be undesirable for planting in home gardens. The remaining plants would have to be planted out in a field far enough apart to make sure that each plant would have enough space to develop

fully. Then when the plants are full grown you are in a position to make selections. The criteria for making the selections are basically whatever objective you have in mind. It may be habit growth, type or size of flowers, size or quality of fruit, etc. Anyway you pick out the plants that most nearly fill the ideal that you have in mind. These plants are then propagated asexually and you are ready to introduce the new variety or varieties.

This is the method that has been widely used in the past to improve horticultural plants, particularly shrubs, flowers and to a limited extent, fruits. It does not involve a knowledge of genetics or cytology. It has given results but it is slow and may be likened to a shot gun method of securing results instead of a single shot method.

Unfortunately, at the present time, accurate information on characters and their inheritance is not known for most trees and shrubs and many ornamental plants. Until that information is known one has to work in a general way instead of in a more specific way.

One of the finest collections of trees and shrubs native to the great plains area is at the Great Plains Horticultural Station at Cheyenne, Wyoming. There they have growing material that has been collected from many sections of this plains area. One can look it over and see how it is growing under the rather difficult soil and environmental conditions of that location.

I think that there are tremendous possibilities of improving our native plants through selection and finally through crossing the finest selections with foreign species. One of the difficulties with trees is the long time required to test the products of crosses. Very few private individuals

will be interested because of the money and time involved. A man does not live long enough to see the results of his labor. Therefore generally, the improvement of trees will be done only at tax supported institutions where there is a continuity of money to support the work.

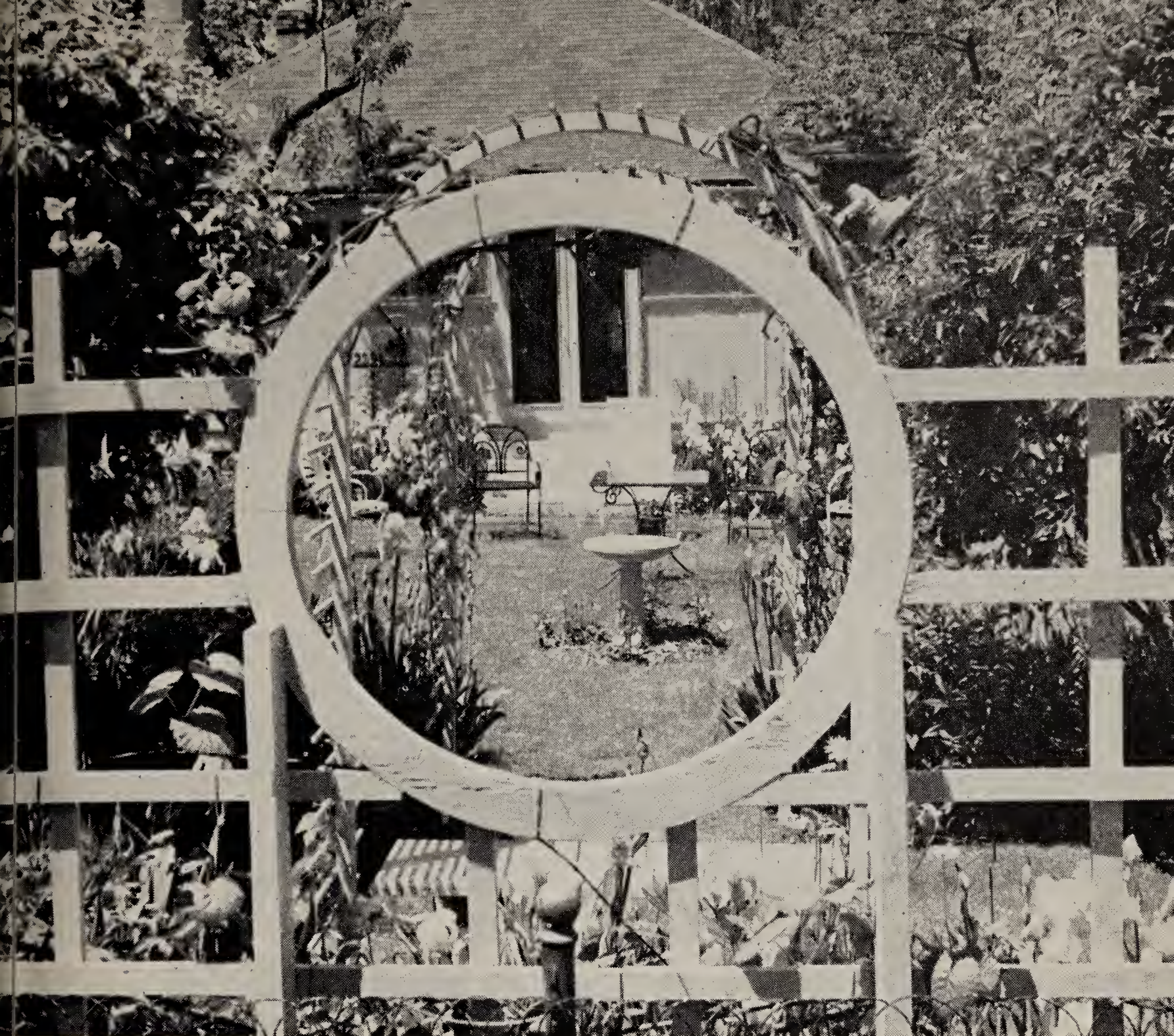
With shrubs and herbaceous ornamentals many private individuals as well as tax supported institutions are interested and will continue to be interested. Such long periods of time are not necessary for the end results and a person can develop it as a hobby and expect to carry it a long way in his lifetime. Mr. W. R. Leslie, Superintendent of the Morden Experimental Station, Morden Manitoba, Canada, who was with you at last year's convention, has demonstrated what one governmental institution can do in one man's lifetime with a project of this kind. Many of their projects are yielding improved varieties of Rosy Bloom crabs, lilacs, caraganas, etc.

I hesitate to suggest native plants that might be tried by someone who is interested in improving them. However, the native plant improvement field has been largely neglected because we as people like the unusual or unfamiliar plants more than those that we see everyday. Many of these native plants possess certain qualities such as hardiness to our climatic conditions or resistance to the peculiar soil conditions which is not possessed by the introduced species or varieties of plants. In Utah in many portions of the state lime induced chlorosis is very severe. Under such conditions often the native plants are much more resistant than the introduced varieties. It may well be that future plantings of ornamentals will be more and more to these resistant native plants because the others will not grow.

There is one point that I do want to make in regard to the improvement of the ornamental plants for this intermountain area. The population in this area is relatively small as compared with the East and West coasts of the country. Large nurseries or seed houses that have breeding programs for the improvement of plants, will not try to develop plants particularly for this area. They instead will try to develop plants that are suitable for the areas where the population is larger because that is where the bulk of their sales are and will continue to be. The only way we will be able to have improved varieties is for either private or public plant breeders to develop them in this area. Good new varieties developed by the horticultural trade will not be selected for this area. In some instances they will be good here but that will be accidental since they will be selected for other regions.

I think that there is a great opportunity for anyone who is interested in this field to produce some very worthwhile varieties of ornamental plants. Furthermore, progress has to be made in this area by people of the area.

This improvement of native ornamental plants is not a project that will likely yield large monetary returns. But it is a project that will become utterly fascinating to the one who becomes interested. Most of the individuals that are now working on such projects find that no day is long enough for them. Life takes on a much deeper meaning because they are creating types of life that will be a service to mankind long after their work ceases. Maybe that in itself is its greatest reward. For fun, stimulation and the good of the intermountain west try to improve some one of the present day ornamentals.



LOOK AND LEARN GARDEN TOURS

Here is a note to remind you that the second Look and Learn Garden Visit will take place on Wednesday, July 18th.

Don't forget that the garden owners will be on hand to tell about them and landscape experts will be available to discuss the do's and don'ts of gardening.

If you haven't a season ticket, single tour tickets may be purchased for 75c at the first garden on the list that you visit.

The gardens on display this tour are:

Mr. and Mrs. L. F. Nelson, 1655
Ivanhoe

Dr. and Mrs. John Long, 1215 Mon-
aco

Dr. and Mrs. George P. Ellis, 1670
Poplar

Mr. and Mrs. G. F. Roark, 1767
Tamarac

Mr. and Mrs. Robert Ewalt, 2354
Elm St.

Mr. and Mrs. Robert E. More, 2215
Locust

Mr. and Mrs. Paul L. Hastings, 2960
Forest

Mr. and Mrs. Walter Slagle, 60 Dex-
ter

You are welcome to visit these gar-
dens any time between 10 A.M. and
6 P.M. on this day. One garden in
this group, the one shown above of
Mr. and Mrs. Ewalt, will also be open
in the evening with a display of spe-
cial lighting.



A HOUSE PLANT FOR MODERNS

By CLAIRE NORTON

PHILODENDRON *pertusum* the florist will tell you it is; the botanist, *Monstera deliciosa*. In the vernacular it goes under the names of the Ceriman, Mexican Bread Fruit and Swiss Cheese Plant. If you go in for modern decor in your home buy it by whatever name you find, for this is the plant so prominently displayed in illustrations of modern interiors in the home magazines, even in linoleum ads. It is the perfect complement for those handsome pottery jardinières of modern design.

Philodendron pertusum, or *Monstera*, belongs to the Aroids, that family which gives us the true *Philodendrons*, the *Pothos*, *Dieffenbachia*, *Chinese Evergreen*, *Calla-lilies* and *Jack-in-the-pulpit*. It hails from tropical

North and Central America where it grows to gigantic size, producing leaves with blades three feet in length, and long, stout epiphytic roots by which it also holds to the tree trunks on which it depends for support. These roots are used by the Indians for making baskets. Its cone-like fruits, rarely produced under house conditions, with a flavor combining pineapple and banana are eaten, hence its specific name of *deliciosa* and its common name of Mexican Bread Fruit.

Despite its high climbing, ambitious habits of growth it makes a splendid and easily grown house plant. It is tolerant of heat and subdued light and asks little beyond a good fibrous potting soil, regular watering and

feeding, and an occasional washing of its leaves with clear tepid water. When grown as a house plant it never makes the growth of its wild environment. Specimens usually seen are two to three feet tall and the leaves only attain a length between one and two feet.

It is these striking leaves for which the plant is grown. They are leathery and shiny, broad, more or less heart-shaped, and deeply incised. The first leaves may show only one or two holes or deep indentations, but later leaves are cut nearly to the mid-rib.

The rate of leaf production is dependent on warm, humid conditions and the amount of feeding. A well grown plant will make a new leaf every month or so.

An aerial root is produced for each new leaf. Without support these roots reach downward to the soil and the plant remains bushlike. Trained to a tree fern pole or a strip of cork bark, the roots attach to the support and the plant climbs. Use of a tree fern pole has an advantage in that it can be kept moist, maintaining the humidity the plant appreciates.

HORTICULTURAL OPPORTUNITIES

By GEORGE W. KELLY

AS A nation we are gradually getting away from the idea that only those too dumb to make a living at anything else become gardeners. True, many people work with plants because they like it and do not consider the financial part of it, so that wages in the horticultural lines are low; but the various sciences and arts that a good horticulturist might profitably know are equal or greater than those required of medical doctors. In addition to an inherent love of plants and beauty, a good understanding of botany, landscape architecture, entomology, plant pathology, chemistry and engineering is necessary for training a well rounded gardener; as well as a smattering of architecture, general art engineering and such trades as carpentry, plumbing and stone work.

One of our great horticultural needs, almost as great as that for an active botanic garden, is a good training school for real dirt gardeners—those who would be valuable assistants to a nurseryman, tree specialist, or private estate owner. Along with this

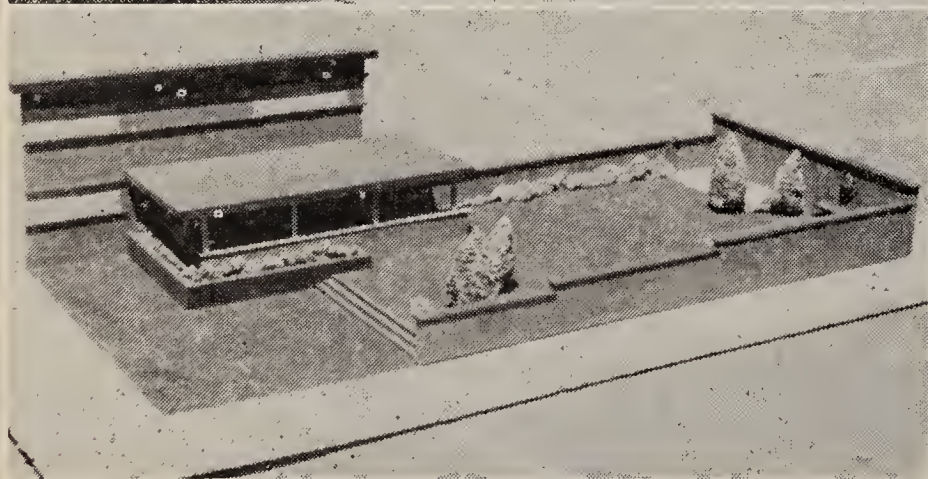
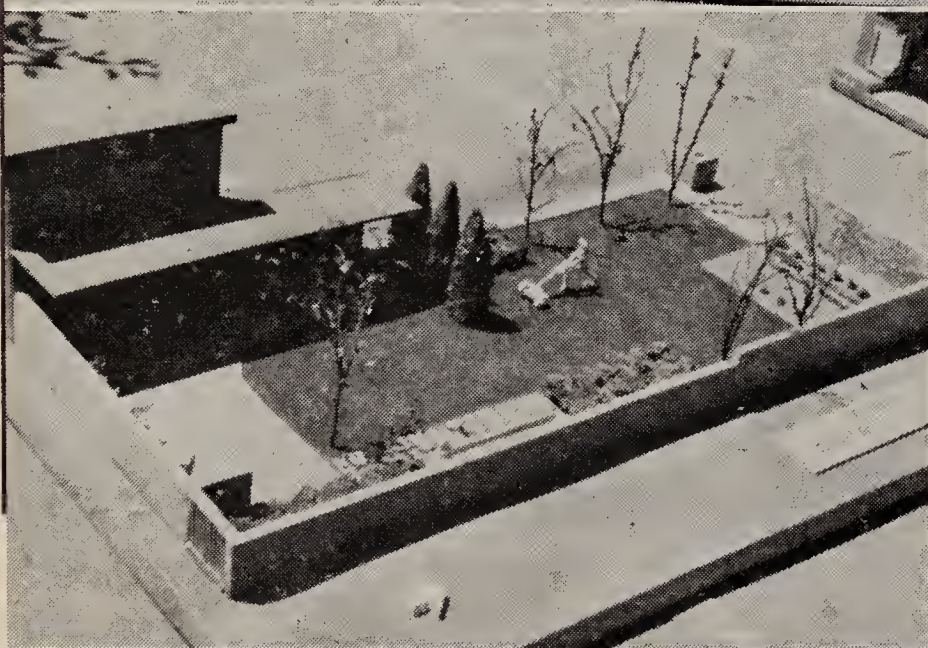
increase in trained gardeners we need a general reappraisal of the value of a trained gardener, by the average home owner, so that these trained men and women may receive salaries comparable to their training and knowledge of plant life.

There are opportunities for trained horticulturists in the City Parks, in the City Forestry departments, in State and National Parks, in schools, in private business such as nurseries and greenhouses; as gardeners, tree experts and landscape architects. The well trained and experienced horticulturist should be considered on a par with the other professions and trades that we have long respected.

Question: All kinds of roses have come up in my rose bed. How many types of roses are there? L. K., Denver.

Answer: The main classes of roses are tea, hybrid tea, hybrid perpetual, polyanthus (cluster), floribunda (large flowering polyanthus), fairy, very small, climber and the shrub rose.

EIGHT WAYS OF DEVELOPING A PATIO



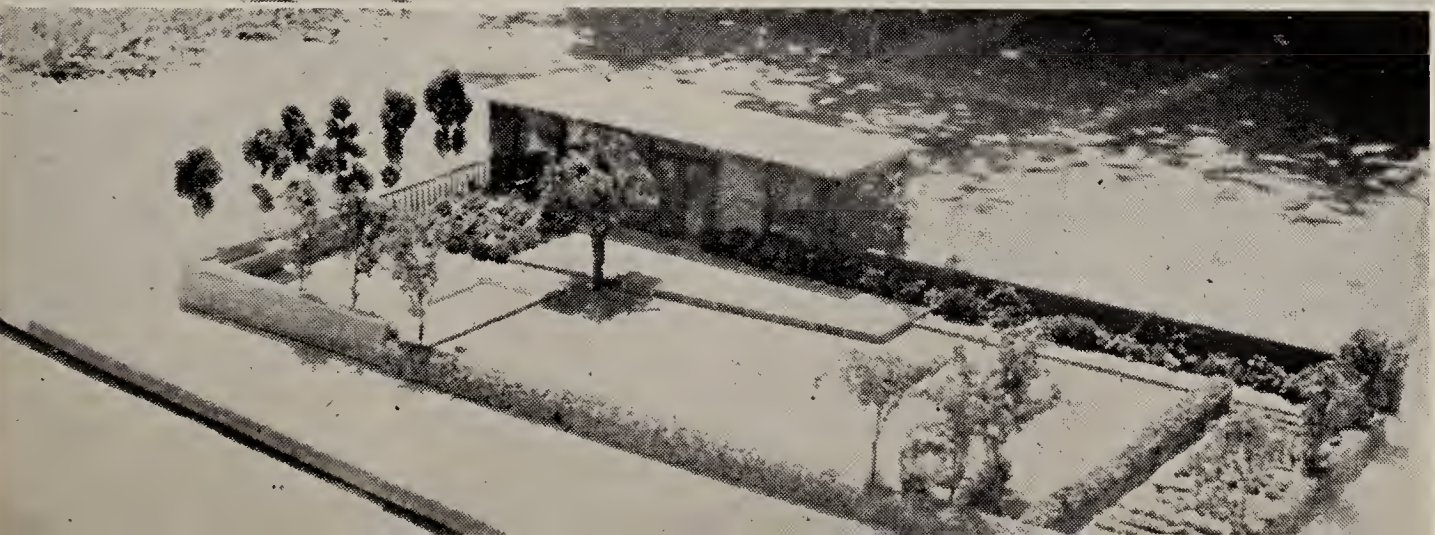
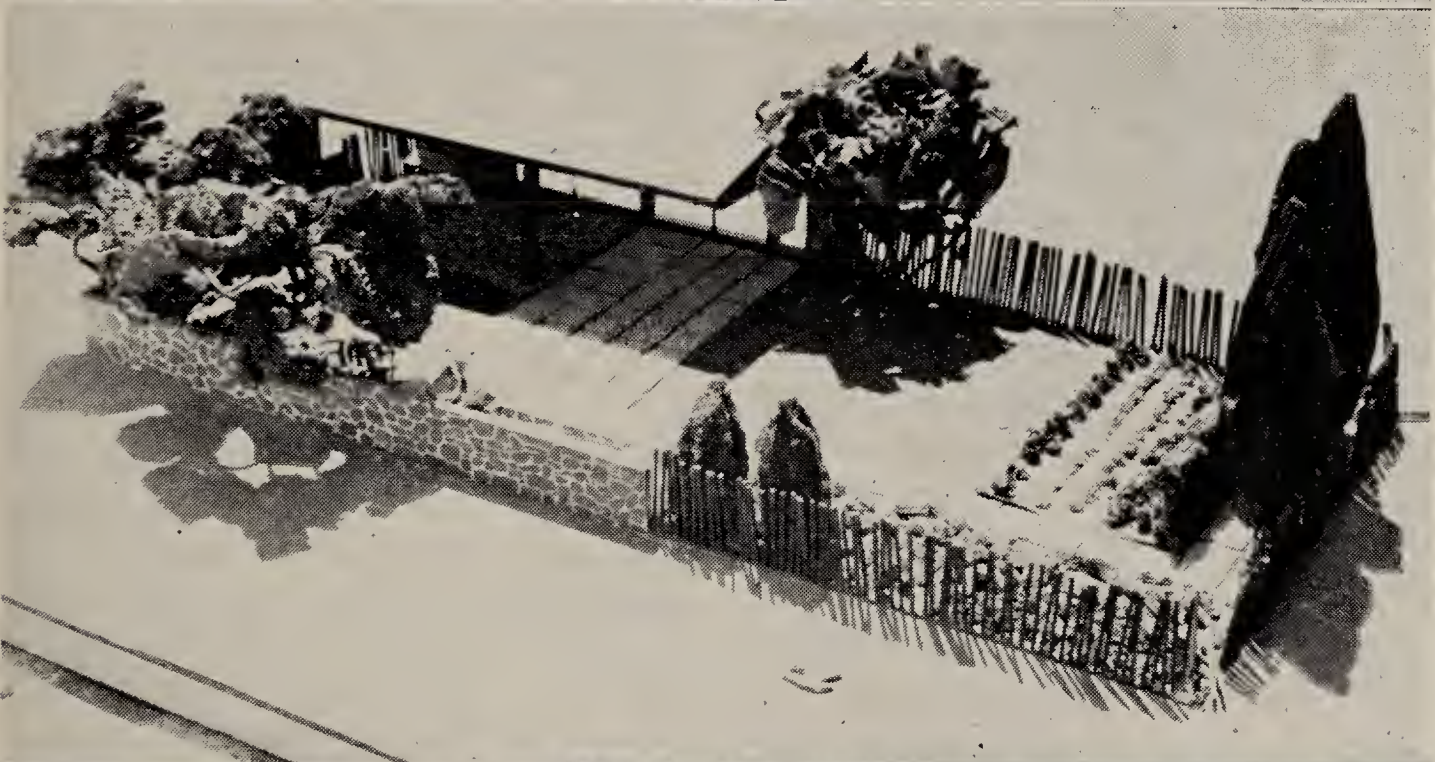
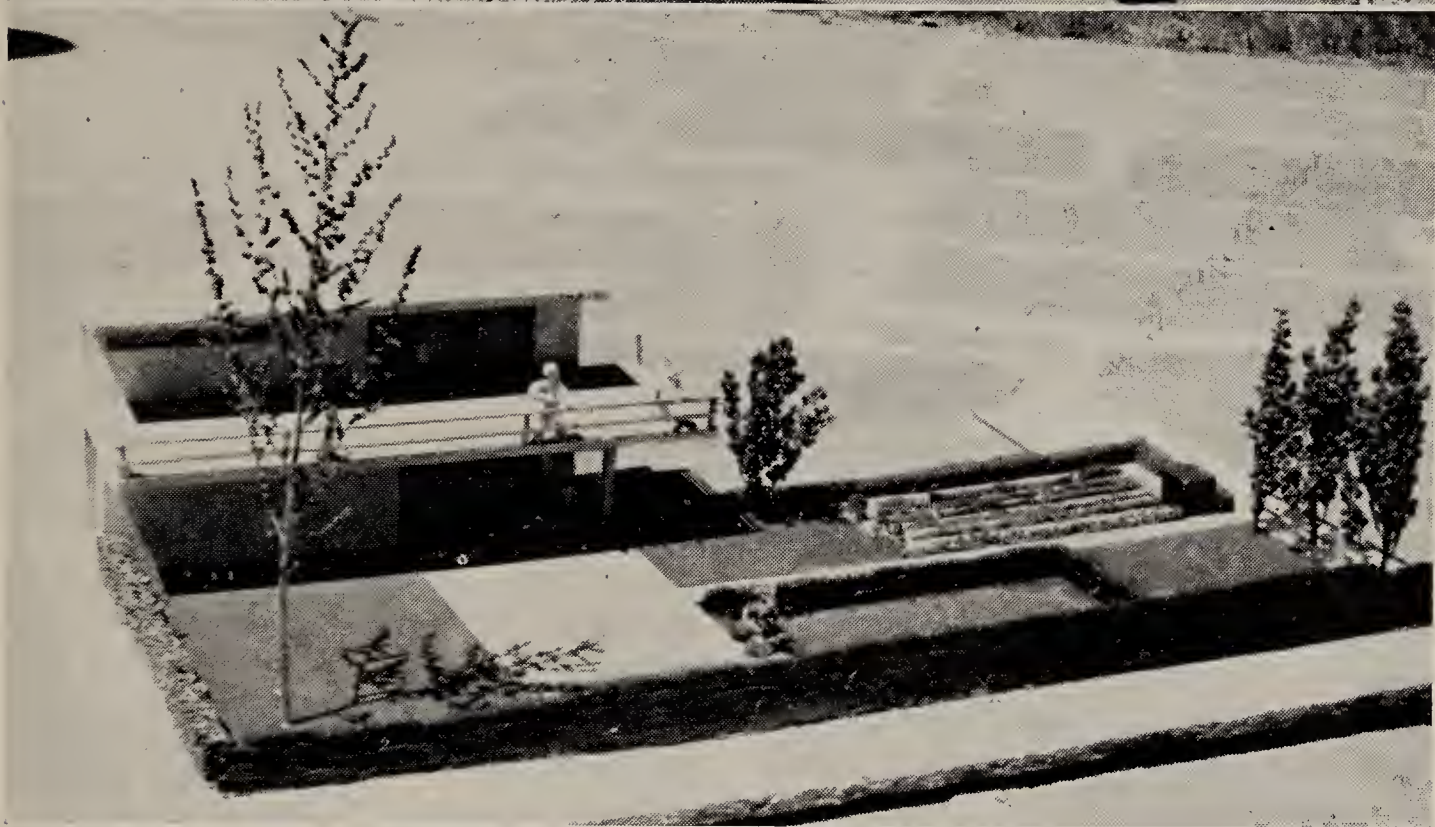
A YEAR ago, at our "Antiques and Horribles" Sale the students of the Denver University School of Architecture exhibited several models of patios which they had developed in their class work. We took pictures of them which are reproduced here. Study these and you will get many good ideas for working out suitable landscaping for a modern garden. Each is based on the same space and same relation to the house. North is indicated by an arrow visible in some of the models.

MUSEUM PICTORIAL

The Trustees of the Denver Museum of Natural History announce a new publication, *MUSEUM PICTORIAL*, to be published at irregular intervals, with possibly four or more numbers annually. As indicated by the name, it is planned to use more illustrations than usual in museum reports, for it is felt that the camera should play an important part in all museum work. These issues will range from 32 to 96 pages and will be restricted to single subjects so that they will lend themselves to departmental filing. They will be devoted to activities of the museum staff ranging from life history studies of animals to expedition reports.

The first of the new series is just off the press. It is *Number 1: Nature Photography with Miniature Cameras* by Alfred M. Bailey.

The *MUSEUM PICTORIALS* will be sold separately at fifty cents each (plus 6c postage), or an unbroken series as issued may be obtained on a subscription basis from the Publications Department, Denver Museum of Natural History, City Park, Denver 6, Colorado. This offer is good for 1951 only.



GROWING LILIES FROM SEED

From Special Publication No. 3 of the North American Lily Society

THE least expensive way to build up a collection of lilies is to grow them from seed. Since virus diseases in lilies are not transmitted by seed, this method has the added advantage of assuring a start with clean healthy seedlings free from these diseases. It requires no more time and trouble than many other perennials.

Lilies can be divided into two types according to seed germination. The "quick germinating" type begins growth of both root and shoot within a few weeks after planting outside in the spring or indoors. They produce a relatively large bulb the first season and many will flower the second. The "slow germinating" type, on the other hand, produces only limited growth during the first exposure to good, warm growing conditions. The embryo merely produces a very small bulb, sometimes entirely within the seed coat and, since there is no stem growth, nothing appears above ground if planted in soil. A period of low temperature, either artificial refrigeration or the normal winter season, is necessary before the shoot dormancy is broken. Thus not until the second season of warmth does the stem appear above ground.

The following lilies are the "quick germinating" type. If planted in late fall they will appear above ground the next spring, or if planted in the spring, will appear above ground in a short time. A species and its varieties behave in the same manner.

amabile	dauricum
aurantiacum	davidi
x aurelian hybrids	elegans
bakerianum	formosanum
bulbiferum	Havemeyer hybrids
callosum	henryi
candidum	lankongense
cernuum	leichtlinii var.
concolor	maximowiczii

leucanthum var.	regale and its
chloraster	hybrids
longiflorum	sargentiae
myriophyllum	stewartianum
neilgherrense	taliense
nepalense	umbellatum
ochraceum	wallichianum
papiliferum	wardii
pumilum	

The following lilies are the "slow germinating" type. If planted in the fall or in the spring they show no top growth until the second spring or early summer.

auratum	japonicum
auratum-speciosum	kelloggii
hybrids	martagon
Backhouse hybrids	maritimum
Bellingham hybrids	michiganense
bolanderi	monadelphum
brownii	occidentale
canadense	pardalinum
carniolicum	parryi
carolinianum or	parvum
michauxii	philadelphicum
cathayanum	pomponium
chalcedonicum	pyrenaicum
catesbaei	rubellum
columbianum	rubescens
cordatum	speciosum
distichum	superbum
duchartrei	szovitzianum
giganteum	tsingtauense
grayi	washingtonianum
humboldtii	

No two lists, such as those above, made up by different authorities will agree exactly. Many of you who have grown lilies from seed will probably take exception to one or more of the classifications. Apparent exceptions will take place after fall planting of the "slow" types when top growth may appear the first spring. This is probably the result of warm weather in the fall or winter after planting allowing the seed to produce the small bulb. Subsequent cold spells may be sufficient to break the shoot dormancy normally overcome the second winter. The effect of the degree of maturity

of the seed upon its germinating behavior is not yet fully understood. There is some indication that relatively immature seed of the "slow" germinating type may behave like the "quick" type.

Time of Planting

It is advisable to separate lily seed into the two germination types and plant each separately. The "quick germinating" type may be planted outdoors either in the fall or spring. There is some danger of planting too early in the fall since the seed may germinate and be killed by subsequent low temperatures. Spring planting may be in April or early May depending upon your location and climate. Many find it desirable to plant the seed indoors in flats or pans in January and February, moving the growing seedlings outdoors when it has become warm enough. This additional growth will enable many to flower the second year that would not otherwise do so.

In outdoor handling of the "slow germinating" type it is best to plant in the spring or early summer. This gives plenty of time for the formation of the "seed bulb" before winter. Since no light is necessary the first summer the seeds of this type may be planted during early summer in flats and stacked in the basement. Inspect them once a month or so to be sure they are kept slightly moist. Very few waterings will be necessary if they are kept in some cool, humid spot. In early winter the flats should be taken out to a cold frame or sheltered spot and carefully mulched. The following spring remove the mulch and the seedlings appear above ground.

Since light is not required until the shoot begins to grow, and because the formation of the seed bulb and the breaking of shoot dormancy do not require a full season of summer or

winter temperatures, it is often possible to greatly speed up handling the "slow germinating" types as follows: Place the seed in jars of moistened peat or vermiculite (be sure to treat the seed with Arasan or Tersan—see DISEASE CONTROL) covered with wax paper or a lid to slow drying out. Beginning with a warm period, alternate three month intervals of warm (around 70° F.) and cold (around 40° F. as in your refrigerator). Inspect the contents at the end of each cold period and remove all seeds which have small bulbs and plant. Top growth appears in one or two weeks. One warm and one cold treatment will usually give a good percentage of seed bulbs. Thus, if you start the treatment in the fall you will get top growth the next spring, a year ahead of the usual time. Seed which has not germinated may respond to another cycle and if it is valuable seed this should be continued. The varying response of seed to this treatment is difficult to explain and is another matter that should be carefully studied. The jars should be examined once a week or so during the warm period and if top growth is seen, those seeds must be taken out and planted to avoid loss. A little such growth during the cold period seems to do no damage.

Planting

The seed may be planted outdoors in flats, frames, or open beds. The soil should be fertile, well drained, and contain enough sand and humus to resist baking. A good friable garden loam is very satisfactory for outdoor planting. For flats and frames a mixture of loam, granulated peat and sand in about equal parts works well. Recently many gardeners have had outstanding success using vermiculite as a medium for growing seedlings. If feeding can be handled satisfactorily this method gives excep-

tional control of water and air relationship. The seed should be covered about one-half inch deep when planted in flats, and from three-quarters to one inch when sown in frames or open ground. It is good practice to space the seed about one-half inch each way in a flat, and about one-half inch in rows six to eight inches apart in a frame or open ground bed.

Disease Control

Seeds should either be dusted with Arasan or soaked from 10 minutes to 24 hours in a saturated suspension of Tersan, the wettable form of Arasan. Spraying the seedlings every two weeks with bordeaux mixture or using copper lime dust to control Botrytis is good practice. During the hottest part of the summer the seedlings should be protected with lath or coarse cloth shade.

Feeding

If lily seed has been planted in good fertile soil, it is not likely that any further fertilization will be necessary. A complete fertilizer, such as a 5-10-5 may be used if the seedling leaves are light green in color and growth is slow. Seedlings in flats may be watered with a solution made by dissolving two tablespoonfuls of the 5-10-5 fertilizer per gallon of water. In open beds or frames a small hand-

ful of fertilizer to a three-foot row of seedlings should be ample.

Transplanting and Mulching

Lily seedlings are usually left in the flat or seed bed until the bulblets are at least $\frac{3}{8}$ to $\frac{1}{2}$ inch in diameter. This may be at the end of the second growing season or even earlier with quick growing kinds. They should then be transplanted to a nursery row to attain flowering size or may be planted in their permanent location. The small bulbs should be covered about three inches deep. Transplanting may be done in late summer while the tops are green or later in the fall when the tops have been killed by frost. In late fall after the first growing season of the seedlings above ground, the beds or flats outdoors should be mulched to prevent heaving of the bulblets during the winter. Sawdust, peat, glass wool or vermiculite are good materials that will not harbor mice which may cause damage if straw or hay are used.

All persons interested in lilies, whether gardeners, growers or dealers, are cordially invited to become members of the North American Lily Society. Annual membership is \$3.00. The annual yearbook goes to all members. Write Dr. Robert N. Stewart, Treasurer, Route 1, Box 75D, Cedar Lane, Berwyn, Maryland.

HOLLYHOCKS

It is a queer quirk of human nature that many times we do not appreciate the nice things that are common and easy to get. How true it is that if Hollyhocks were hard to grow we would prize them as highly as orchids!

There is no flower in the Rocky Mountain region which will give a greater display of color for the effort expended, yet they are not grown as much as they should be. Some of our mountain towns by accident or otherwise, have hollyhocks growing all around the streets, alleys and yards. And, what a display they make!

Some people raise the silly objection that hollyhocks attract rats. Others see only the ragged stems of hollyhocks after they have finished blooming. The answer to both objections is to make it a rule to cut the hollyhocks down and destroy them when they have passed their prime of blooming.

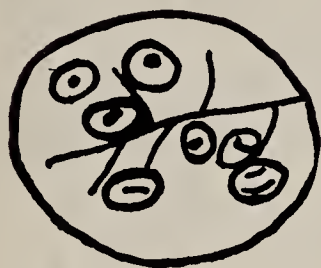
LIFE CYCLE OF CODLING MOTH OR COMMON APPLE WORM

By CARL AND EDNA SCHULHOFF



Larva of moth overwinters in cocoon.

Emerges as moth a week or ten days after petal fall. Moth on right, much enlarged.



Lays eggs (much enlarged) on upper and under surfaces of apple leaves, 2-3 weeks after petal fall.



3-4 weeks after petal-fall tiny white worms crawl from leaves to nearest apple.



After about a month in fruit, the worms crawl out, go through the cocoon, pupa, moth procedure again. The second brood appears in July or early August.

Experimental evidence shows the necessity of a minimum of 4 cover spray applications for apples, to check worms. (These general rules may vary much in some areas. Editor.)



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USE YOUR LIBRARY

Since being established some four years ago at Horticulture House, the Helen Fowler Horticultural Library has been built into an institution to be proud of. It is probably the most complete collection of books dealing with gardening and forestry west of the Mississippi.

Anyone interested in the subjects covered here is welcome to come in at any time that the house is open and refer to these books, but the privilege of checking them out is reserved to members of this Association.

Are you interested in lilies? There are several good books in the library all about lilies. Do you want to know

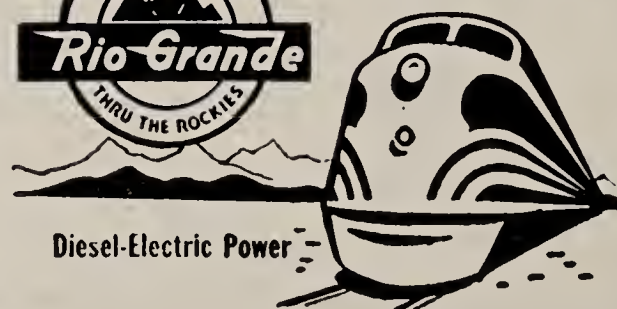


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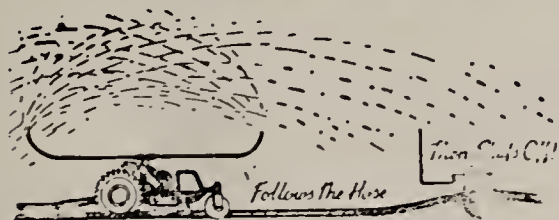
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OUR DINOSAUR MONUMENT TRIP

NINE hardy adventurers spent the last six days in May exploring some of the wild and wonderful parts of the Dinosaur National Monument. Two Jeeps were taken so that the primitive roads in the area could be negotiated. First camp was made at the gateway to the Lodore Canyon, where Major Powell so many years ago started his adventurous trip down through this deep and frightening canyon.

The second night was spent at the Mantle Ranch where the ancient Indian cliff dwellings and Pictographs could be seen and studied. The third night was passed at Pat's Hole under the shadow of Steamboat Rock at the junction of the Yampa and Green Rivers.

The fourth day we climbed out of

the hole and viewed the amazing canyons from the vantage point of Harper's Corner where we could look down some 3000 feet to our camp site of the night before. The fourth night found us camped on the Green River where it comes out of its deep canyon above Jensen, Utah. The Dinosaur quarry was quickly inspected and the party drove around to Island Park for the fifth night. From here some walked or rode over to Jones' Hole some seven miles overland. Here we found a real Shangri La. A large stream of clear, cold water comes out of the mountain side and flows some six miles to lose itself in the waters of the muddy Green. Along this amazing stream are plants found nowhere else for many miles. The fantastically sculptured rocks rise

up to the sky on every side and one truly feels in another world.

We all returned more than ever convinced that this wonderland created by Nature should not be destroyed for the benefit of some commercial development, as the papers of the last few weeks have finally admitted is the case. It is a fact that any truth-seeking person can verify that there are other places where dams may be built, to supply more power, more water storage or any other benefits that may be credited to dams, and that this irreplaceable monument may be preserved for the inspiration and education of future generations.

It is only from the fact that few people have seen this area that there could be any controversy as to the necessity of preserving it in its primitive nature for all time. And do not let anyone sell you the foolish idea

that dams will make of this a superior recreational area. Nothing that destroys its natural wildness will do anything but ruin it. To preserve this area of wild and deep canyons should be the aim of every conservation minded person in our country. Now that the private interests who hope to profit from development of this area have come out in the open we can all know whom we have to fight and can know the basis for the many misrepresentations which have been currently circulated. This is an area of immense value to every one of us and we must protect it.

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BIRDS IN OUR GARDEN

RUTH ASHTON NELSON

THE birds don't recognize any boundaries to our garden and so I find myself following them across the little road to the "woods" fringing the park. During the second week in May this was an ideal spot for birding—trees still mostly leafless, resident birds starting to nest and migratory ones feeding busily among the opening buds. The catkins on the tall cottonwoods, the tassels of fringes on the boxelders, the dark button-like blooms of the ash trees, all seemed to offer enticing meals to chickadees, orange-crowned and Audubon warblers, pine siskins, grosbeaks, bullock orioles and others. Some would feed on the buds or blooms themselves, but most would search out the insects harbored among them.

I found strolling along the road around our "bend" delightful and rewarding between six and seven on sunny mornings. The sun warmed my back and lighted the shrubbery and trees on the west so that bird

watching was made easy. A pair of flickers, which frequently visit the garden to probe the ant hills, have been excavating a hole in a dead cottonwood stub. I first noticed their activity from the dinette window and had been watching them for several days. At first the work was enlarging the entrance hole from the outside. The site is only a few feet from the road, and the birds pay almost no attention to me as I walk by or stand searching the branches and sky with my field glasses. One morning I heard the tap-tapping but no bird was in sight. As I passed directly opposite the entrance hole in the stub, a bright face with red "moustache" marks appeared framed in the round hole. It regarded me intently for a moment then dropped out of sight and the tap-tapping continued. The female flew in with a flash of salmony-red, uttering some charming soft guttural notes as she alighted on the home stub.

Another time it intrigued me to see a tiny house wren busily investigating every nook and crevice of the old stub practically under the beak of the flicker which was chipping away at the entrance hole, paying not the slightest attention to the wren.

At intervals considerable overflow water comes down from above and forms large puddles in the little road. Apparently this brings along an accumulation of seeds and insects which become concentrated where this water overflows. In addition it offers plenty of water for bathing and drinking, so it is a wonderful spot to watch. Here the Brewers blackbirds, easily recognized by their white eye-ring and their small size, may often be seen walking about, feeding and bathing. The male is handsome and the



smooth brownish-gray female, to my notion, is much neater, trimmer and more elegant looking than her streaked cousin, the female red-wing.

The doves also like this spot, several often bathing at once. A thrill one morning was the sight of half a dozen lark sparrows bathing in the little pool. Another time two song sparrows, one white crown and one chippie were all enjoying it together.

I can watch this same spot from the window by my dressing table (just one of the delights of this new home). Twice one day a flash of red, yellow and black caught my eye as a male western tanager stopped for a drink.

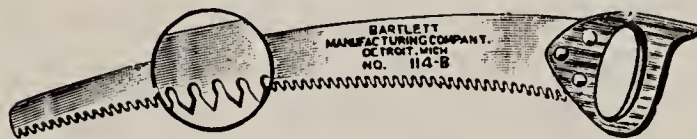
Nesting is underway, a male Brewer blackbird busily tore shreds of barks from a dead cottonwood branch and flew away with his beak full of it. The doves and grosbeaks pick up sticks but don't seem to have anything very definite in mind as yet. No doubt there is much more going

on which I have not caught. A pair of spotted towhees visited the garden on two occasions and at the near neighbors I saw a green-tailed towhee. I've been away from home since the middle of May and so can not say whether or not these settled down to housekeeping in our vicinity.

(Note: These comments appear from six weeks to two months later than the actual happening of the event recorded.)

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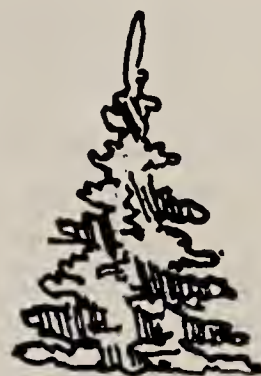
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THE very future of the nation depends on our waking up to the need for sound conservation and the proper use of our water wealth.

In the long run, this entire nation could fall into decadence, fail, even die, if we do not give the consideration we must to the water wealth and the soil wealth so closely linked with it.

That's right—the United States of America might die as a nation because of squandering the basic wealth we have in water.

Other nations, once lusty, have died—just because they suffered a "water shortage."

* * *

Humans are a part of the living world. No matter how complex and highly organized an environment they may live in, human life rests on a few simple things that are a part of what we call "the great outdoors." In the hurly-burly of modern society and economy, we get further and further away from these very simple things and lose sight of how all life depends on them. We get involved in the routines and services of our man-constructed environment so thoroughly we don't think much beyond the counter in the grocery store, the light switch, the city's bus system, the haberdashery or dress shop where we buy clothes. One of these indispensables is our share of water.

* * *

The basis of our approach involves an about-face from the predominant outlook we have held toward water. The overwhelming bulk of thought, action and funds has been directed

at downstream, constructional works to utilize or control water at some point well along in transit line. Our water management must begin at ridgepoles between watersheds.

* * *

More especially, in the higher reaches of catchment basins, there should be less draining of swampy areas, particularly with public monies.

* * *

Water should be retarded in its travels from where it falls. Particularly it should be trapped as long as possible in higher gathering basins. If it is hurried away the opportunities for use are lessened. The more slowly it may travel the transit line, the more uses may be made of it.

* * *

Two principles are fundamental. The first is the allocation of water to all needs, in proportion to their service to community good. No single use should have a monopoly. The second is the maintenance of the highest possible usability in water throughout the line of transit. Reuse, and further reuse is imperative. Those who damage water beyond reuse are detrimental to community life.

The foregoing applies primarily to surface waters. The need for conservation is equally important in our ground water supplies.

* * *

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AUCTION REPORT

A final accounting of the Auction held May 19th shows a net profit of \$1,042.72. This is a very gratifying result of work by the committee.

Mrs. Charlotte Barbour started as chairman of the committee and had things rather well lined up before she had to leave for the East. She turned over arrangements to Mrs. Winifred Pinkett who worked hard and efficiently to carry out final plans. Mrs. Churchill Owen and Mrs. Richard Davis assisted Mrs. Pinkett in sorting and arranging material for sale. Helen Fowler donated a large basket of food which she raffled off. Don Peach won it. Evelyn Johnston and her girls conducted the refreshment stand and collected for items as sold in their usual very efficient way.

John Swingle, who now surely is entitled to the title of Colonel, was the star of the day with his humor and blarney. People just loved to buy from him. There was a good crowd from start to finish and bidding was brisk. Besides getting bargains everyone had fun. Earl Sinnamon assisted John several times.

This is the least painful way to raise money for necessary expenses of the Association's work that has been suggested to date. Look for the fall plant sale and the "Antiques and Horribles" sale next spring.

Between now and the Auction next year all members should be alert to locate good material to sell. If anyone is moving and has valuable antiques or furniture to dispose of, call us and we will arrange to get it and hold it until next year's date.

A list of those who contributed time or money to help this auction is given below as near as can be remembered.

Mrs. D. M. Andrews, 405 Arapahoe Ave., Boulder, Colo.

Mrs. H. Calvin Fisher, 1650 Monaco Blvd., Denver.

Mrs. Wm. Bryans, III, 760 Milwaukee.

Helen Newberry (Trade Winds Antique Shop), 1209 Logan.

Mrs. John Kerr, 1900 E. 7th Ave.

Mrs. Wallin G. Foster, 2020 E. 8th Ave.

Mrs. Geo. H. Garrey, 1300 E. 7th Ave.

Mrs. C. Walter Allen, 644 Monaco Parkway.

Mrs. Helen Fowler, 10,000 W. 44th Ave., Wheatridge.

Mrs. Moras Shubert, 2030 S. York.

Mrs. Frank McLister, 445 Westwood Drive.

Mrs. Hugh Catherwood, 128 Eudora.

Mrs. E. Johnston and Camp Fire Girls, 124 Delaware.

Mrs. E. C. Ellett, 1330 Gilpin.

Mrs. R. E. Pate, Jr., 490 Race.

Mrs. J. Churchill Owen, 3901 S. University, Englewood.

Mrs. Richard Davis, 860 Gaylord.

Mrs. J. Kernan Weckbaugh, 9 Cherry Hills Drive, Englewood.

Mrs. E. R. Kalmbach, 2654 Forest.

Mrs. Myron Blackmer, 4400 E. Quincy Ave., Englewood.

Mrs. Everett Parker, 120 Franklin.

Mrs. Wm. G. Evans, 1310 Bannock.

Mrs. Alexander Barbour.

Mrs. Winifred Pinkett (in charge) and donated.

Mrs. Beverly E. Finch, 827 Sherman.

Leon's Millinery, 2317 Williams.

Mayfair Market, 464 Garfield.

Mrs. R. L. Rickenbaugh, 361 Ash.

Mr. Richard E. Pate, Jr., w/Davis and Shaw Furniture Co.

Mrs. Robert M. Perry, 2151 Hawthorne Pl.

Mr. Walter Sawicki, Jr., 508 E. Hampden Ave., Englewood.

Maurice H. Fisher, Fisher Hardware Co., 2322 E. Colfax.



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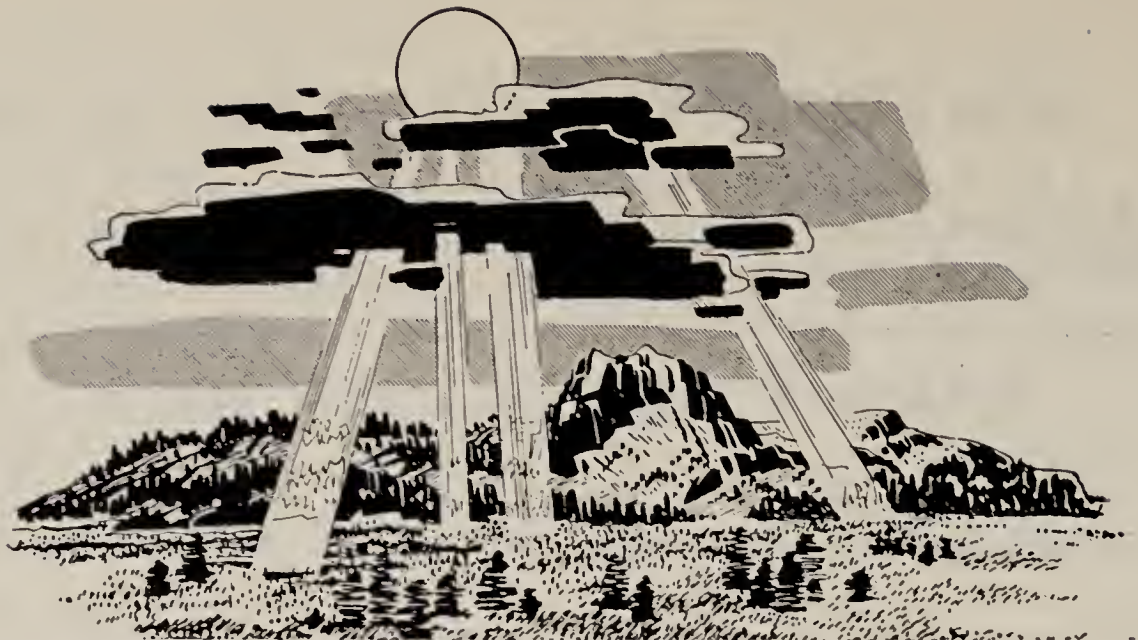
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JULY GARDENING

WEEDS we will always have with us. Many of the cultivated plants have been selected over the years for their size and beauty and have lost their ability to compete with those plants which have only been subject to the natural selection of those "fittest" to survive. Now that we have interfered with Nature to that extent we are doomed to an everlasting fight with these "weeds". Get at them early when they are small and tender. Then they are easy to eliminate, but just turn your back on them a few days and they become so established that they require much muscle and sweat to destroy.

WATERING will begin to be a problem this month as the days become warmer and less natural rainfall can be expected. If lawns and other plants have been prepared for this weather by compelling them to send their roots deep they will survive this hot weather with a minimum of damage. Water thoroughly each time so that the moisture really gets down to the farthest roots of the plants, then wait until they need it before watering again. How can you tell when a plant needs water? Some have a green thumb and know by instinct, and others dig down occasionally and see how much moisture is in the lower soil.

TRIMMING will be a continuous chore this season of the year. Trimming hedges will be more effective if done frequently so that little new growth is wasted. Trimming lawn edges should be kept to a minimum by carefully planning. Trimming up the old perennial stalks and dead twigs in the shrubs will help greatly in the general appearance of a garden. Neatness adds as much to the beauty of a garden as good plants or proper design.

Watch for signs of chlorosis in such susceptible plants as Barberry, Flowering Quince, Ninebark, Roses, Phlox and Maple trees. This is usually caused by an excess of alkalinity of the soil preventing the plant getting the necessary iron or other elements. The addition of iron sulphate, aluminum sulphate, sulphur or manure will often help this condition. Applications of chemicals under the bark or sprayed on the leaves will often give temporary relief. Improvement of the soil *before* planting is the best way of preventing this damage.

INSECT PESTS will often become serious at this season. Inspect your plants at least weekly for the first signs of damage. Get after the insects when they first appear or they will multiply rapidly and do a great deal of damage. All purpose sprays and dusts may be blindly applied periodically and will control most of the common insects and diseases, but it is much better to learn to know the most common pests and the proper control for them. The regular use of the powerful chemicals may often do as much harm in killing beneficial insects as in destroying harmful ones. Ants running up and down plants will often indicate the presence of aphids, and chewed leaves will indicate some beetle or worm. Keep at least one good contact spray and one good stomach poison available for immediate use. Red spiders on evergreens and many other plants may begin to do considerable damage as the weather becomes hotter.

Many things will be seen in the garden now that are not as they should be, but this is the poorest time of the year to be moving plants around. Start now to keep a **GARDEN DIARY**, where notes can be made of the things that should be done at other times of the year. Also make notes of the good effects seen in others' gardens that you might use in yours.



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HORTICULTURE SOCIETY

The above is a reproduction of an old card which was distributed about 1922 by a joint committee from existing conservation organizations. It is very appropriate to repeat it at this time.

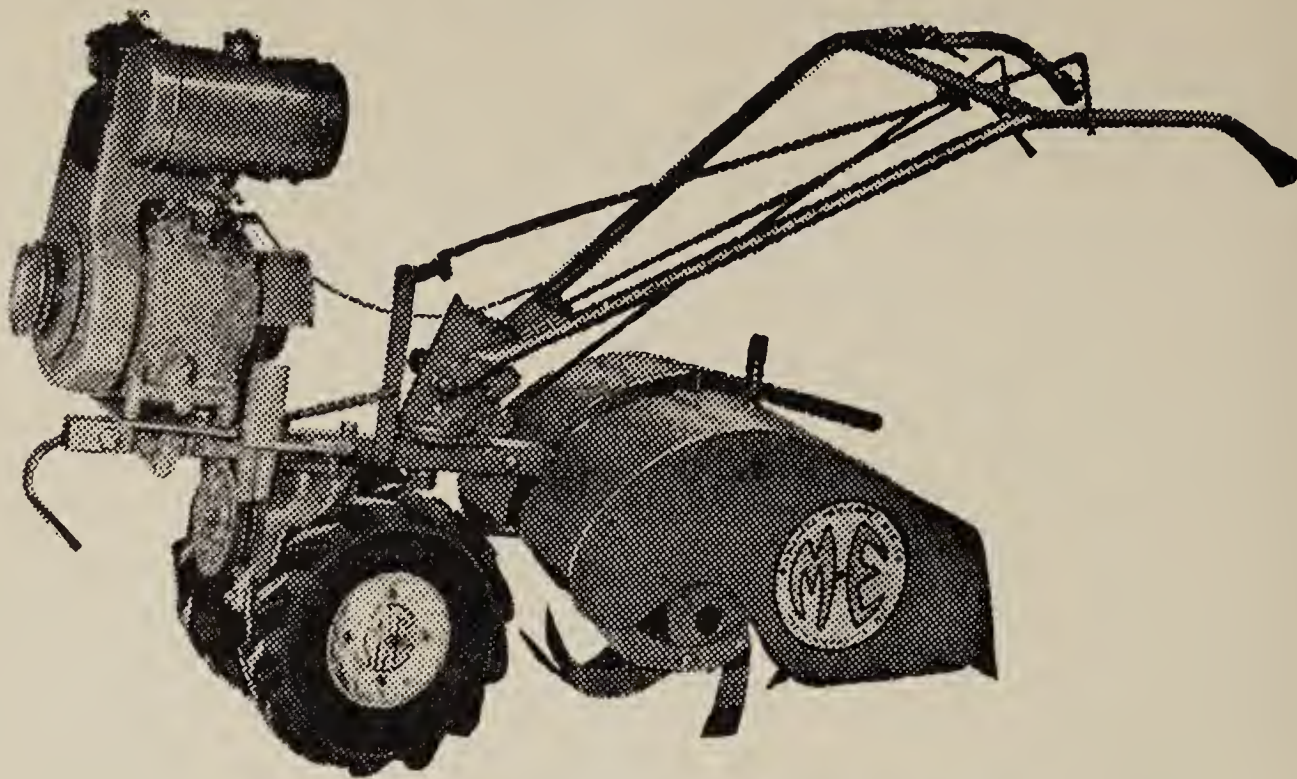
August, 1951

The Green Thumb

COLORADO'S GARDEN MAGAZINE



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The Green Thumb

Vol. 8

AUGUST, 1951

No. 8

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Picture on front cover taken near Ward, Colo., by Chas. J. Ott. Picture on rear cover of Perennial Phlox, taken by Bruce Korfage.

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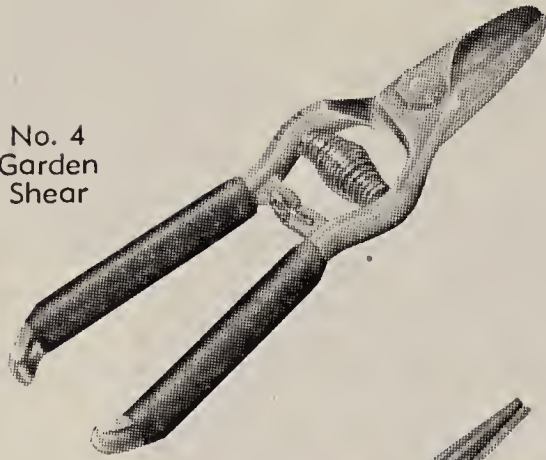
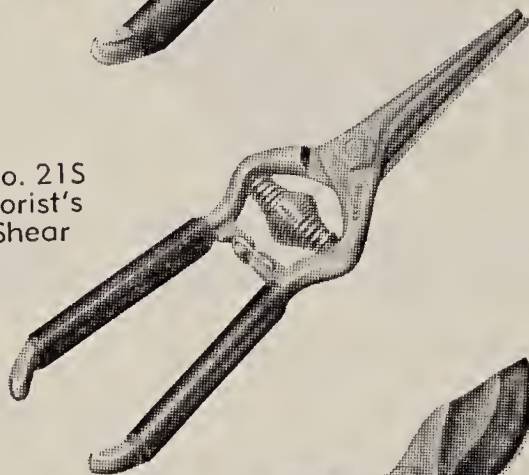
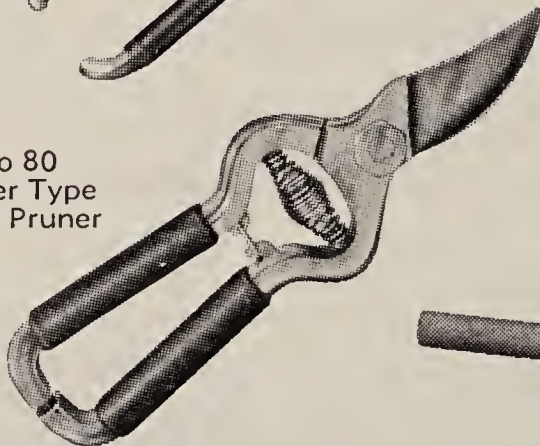
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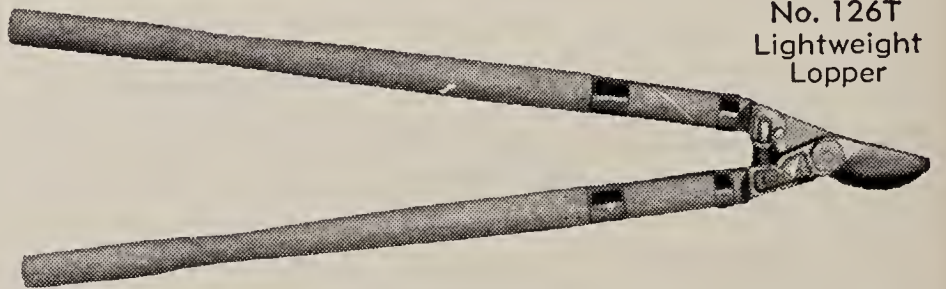
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Secretary-TreasurerMildred Cook

AUGUST SCHEDULE

August 4-5, Saturday, P. M., and Sunday. Climb of Mt. Meeker, led by Majorie Shepard. Leave Horticulture House at 2 P. M. Take overnight equipment.

August 11-12, Open date. A trip will be scheduled upon request.

August 15, Wednesday. Third of the Garden Tours. To southeast Denver. Tickets on sale at Horticulture House.

August 19, Sunday. A repeat trip to the Ghost Town of Corona from West Portal. Marjorie Shepard, leader. Leave Horticulture House at 7:45 A. M.

August 25-26. Open date. A trip will be scheduled upon request.

August 31, Sept. 1-2, Friday, Saturday, Sunday. Wheeler National Monument, near Wagon Wheel Gap. Horse pack trip. Mary Lou Cox and Earl Shaw, leaders.

Sept. 1, Saturday. Annual picnic of the Association at Elitch Gardens.

ANNUAL PICNIC

The annual picnic of the Association will be held this year at Elitch Gardens on September 1st. Announcements will be mailed later when the committee has decided on details of program. This should be a good place to get together among beautiful surroundings.

Look and Learn Garden Tours

August is a wonderful garden month if we ever saw one, and so we want to remind you to be sure to take advantage of the last LOOK and LEARN garden visit, which will be on Wednesday, August 15. If you don't have a season ticket, you can get a ticket for just this visit at Horticulture House or at any of the gardens scheduled for the day. The single admission price of 75c entitles you to see and hear about all of the gardens listed below. All of the gardens on this tour are in southeast Denver and in Englewood. They will be open from ten in the morning until six o'clock. Drop in and see them at any time during these hours. And don't hesitate to go just because you are alone or unacquainted, for your ticket is your invitation, and the garden owners and landscape experts will be more than happy to see you and to point out the whyfors and wherefors. Dr. and Mrs. Kenneth Sawyer, 165 High St.

Mr. Martin Keul, 3618 E. Second Ave.

Mr. and Mrs. M. F. Carney, 742 S. Steele

Dr. and Mrs. Byron Cohn, 3100 Ohm Way, Just West of 742 S. Steele

Mr. and Mrs. A. J. Horne, 1300 S. Milwaukee

Mr. and Mrs. Bill Lucking, 835 W. Quincy, Englewood

COLORADO CACTI

By M. WALTER PESMAN

"THE Cacti are a snooty clan," according to the clever jingle that many a cactus lover likes to quote. Perhaps they have a right to be, since they are one hundred percent Americans and are certainly among the first unapproachable families. Only one genus of the cactus family, while of tropical American origin, has close relatives in tropical Africa and in Ceylon; it is *Rhipsalis*, which as an epiphyte, after all, does not have its roots in any soil and thus has a perfect right to world citizenship.

The cactus charm, on the other hand, has spread rapidly in all directions and it is nothing unusual to find cactus fans growing their beloved plants in an attic from the precious seeds introduced from other regions more adapted to the growing of these succulents. Most of them prefer almost desert conditions.

Just as Coloradoans will go to infinite trouble to grow exotic orchids, so a gardener in Holland or England, for instance, will boast of a Prickly Pear, grown under special conditions and with unlimited care. How well I remember the jubilant cry by Henri Corrévon of Swiss Alpines fame, when I brought him some of our choice ball cacti.

Colorado cacti are practically all adapted to dry weather conditions; *Echinocactus* or *Pediocactus simpsoni*, however, as the name Mountain Cactus indicates, likes moisture as much as twice that of the plains. Occasionally its variety "minor" may be found in swampy ground even.

What I hope to do in this little treatise is to present our Colorado tribe in such a way as to make their recognition easy. About two dozen species have been assigned to Colo-

rado, but less than a dozen are commonly found. And a number of these are confined to certain specific regions only.

Roughly speaking most of our cacti fall in four groups each of which is easy to tell. Exceptions are Devil's Claw and Snowball or Mountain cactus which are less easily placed in any of these four groups.

1. The *Cane Cactus* group to which the *Tree Cactus* group belongs, with cylindrical joints and barbed spines. (*Cylindropuntia*.)

2. The *Prickly Pear* type, with fleshy joints, generally flat, and again with barbed spines. (*Platyopuntia*.) All the other types have spines without barbs, are jointless, and fail to develop leaves, even on young growth.

3. The typical small *Ball Cactus* (*Mamillaria* or *Coryphanthanae*) is seldom over two inches in any direction; flowers develop on top, between the little knobs or tubercles from which the spines radiate.

4. *Ribbed Cactus* with usually lateral flowers is called *Echinocereus*, roughly meaning "wax candles on a hedgehog." In this group belong the very striking mound cactus like King's Crown and Turkshead, as well as the interesting yellow Hen and Chickens (*Echinocereus viridiflorus*). All have the ribbed formation.

Now for the non-conformants.

Devil's Claw Cactus is a beautiful yellow or purple ribbed cactus in southwest Colorado, differing from the other ribbed cacti in having the blossoms borne on top in its center. (*Echinocactus whipplei*.) Its hook-spine is indicative.

Snowball Cactus might be taken for a regular Ball Cactus, except that the pink flowers develop from the nipple like tubercles instead of between

them. Mountain Cactus is its other name (*Echinocactus simpsoni*). It is properly named for its location in mountains or foothills, as high as 10,000 feet, as on Monarch Pass. In diameter it reaches six inches. Its variety *minor* has shorter spines, and is a profuse bloomer; it is found on both eastern and western slopes of the Rockies. Since it occurs commonly on Pikes Peak, it has been named also Pikes Peak cactus. Its delicately scented pink flowers and the fact that it can stand both rain-fall and cold make it a welcome garden plant.

Now if you came to Colorado to make a "bowing acquaintance" with its cacti (according to the warning in the jingle, you should not shake hands)—where would you go to meet them? A number of them are quite particular as to location.

The *Tree Cactus*, for instance, long before the Korean Episode, seems to have developed a feeling about the 38th parallel, and seldom goes more than twenty or twenty-five miles farther north; it follows the Arkansas River rather closely in this mystical boundary, being plentiful in the southwest part of Colorado, but bounded by this 20-mile strip north of the river and by the Rockies to the west. With its purple or pink flowers in June, followed by yellow fruits, the *Tree Cactus* (*Opuntia arborescens* or *O. imbricata*) is a beautiful sight, even in Colorado where it does not grow much beyond six feet tall. It does develop into a tree in Mexico, where it is known as Coyote Candles (*Velas de coyote*) or Focoztle. Many tourists like to carry home one of its decorative mesh-work branches, showing a woody lacework skeleton, after the pulpy material has decayed. Curio dealers sell them for candlesticks.

Only in the southwestern corner of Colorado can you find the little

brother of *Tree Cactus*, *Opuntia davisii*, usually called *Rattail Cactus*, a low spreading shrub from 4 to 12 inches. It has yellow flowers and long brownish spines, covered with a strawcolored sheath. A still smaller relative, *Opuntia clavata*, also with yellow blossoms, is a New Mexico spreading plant, which may or may not occur in Colorado.

It is fun to initiate a new-comer to the delight of eating prickly pear fruit; it seems such a risky business, and in reality is so simple and pleasant. All you need to do is rub off the spines (not forgetting the tiny ones), or peel the skin of the juicy fruit, and you have a cool delicacy quite unlike any other fruit. If you object to the large number of seeds inside, let me remind you of your experience with pomegranates. Tuna fruits, another name for prickly pear are equally common in some markets of the southwest.

Incidentally, the beginner is very apt to make blunders on identifying *Prickly Pear*; about six species look very much alike in general. Two of these only have juicy fruit. The others have similar flowers and similar flat pads, differing, however, in producing dry fruit, more spines and green stigmas instead of yellow (or at most greenish yellow) stigmas. The question arises whether all these species have evolved rather recently, are now in a period of evolution or may even be results of hybridization on a large scale. More scientific investigation is necessary.

The two species with juicy fruit are found in different locations. The common *Prickly Pear* of the eastern plains of Colorado, *Opuntia humifusa* or *rafinesquei*, Eng. covers miles and miles of territory. Its yellow, orange or even pink blossoms in June and July never fail to draw admiration for their beauty; some natives call them prairie rose. Purple-red fruit carries

on its beauty in fall. *Opuntia vulgare* of the eastern plains may be really the same plant or a close relative. Other species have been separated from it on the basis of differences in spines, shape of joints and such. Interestingly enough, it never is found west of the Continental Divide.

There, and in southeastern Colorado, another juicy-fruited *Opuntia* takes over, the New Mexico Prickly Pear, *Opuntia phaeacantha*, Engelm. It is larger than its northeastern relative, and more decorative. Pink flowers are not unusual in this species. Its joints are generally over four inches long and wide, those of *O. rafinesquei* much less.

Of the dry-fruited *Opuntias* the so-called *Dwarf Cactus*, *Opuntia Schweriniana*, of Northwestern Colo-

PRICKLY PEAR, *Opuntia humifusa* or *O. rafinesquei*, covers miles and miles of territory (yellow, orange, or pink).



HUNGER CACTUS, *Opuntia polyacantha* provides no food for man or beast, but is strikingly beautiful.

rado, is easily told by its small joints (2 by 2½ inches) and greenish yellow blossoms. It was named after the Count von Schwerin, as being "small, elegant but very painfully stinging".

Hunger Cactus, *Opuntia polyacantha*, so called because its dry fruit provides no food for beast or man, is the most widespread of all Colorado cacti: abundant on eastern plains, found in mountains and on the western slope. Flowers range from yellow to purple, spines from white or brown to variegated. A favorite in collections, and unsurpassed for beauty, with the possible exception of its longspined relative the *Porcupine Cactus*, *Opuntia hystricina*, found in Southwest Colorado. The name is indicative, since the spines bristle in all directions.

Even more shaggy is the *Grizzly Bear Cactus*, or *Wooly Cactus*, *Opuntia trichophora*; its hairy white spines may grow to over four inches in length. It is found in the Wet Mountain Valley and in the far western strip of our state: Montrose, Cortez, Yampa Canyon.

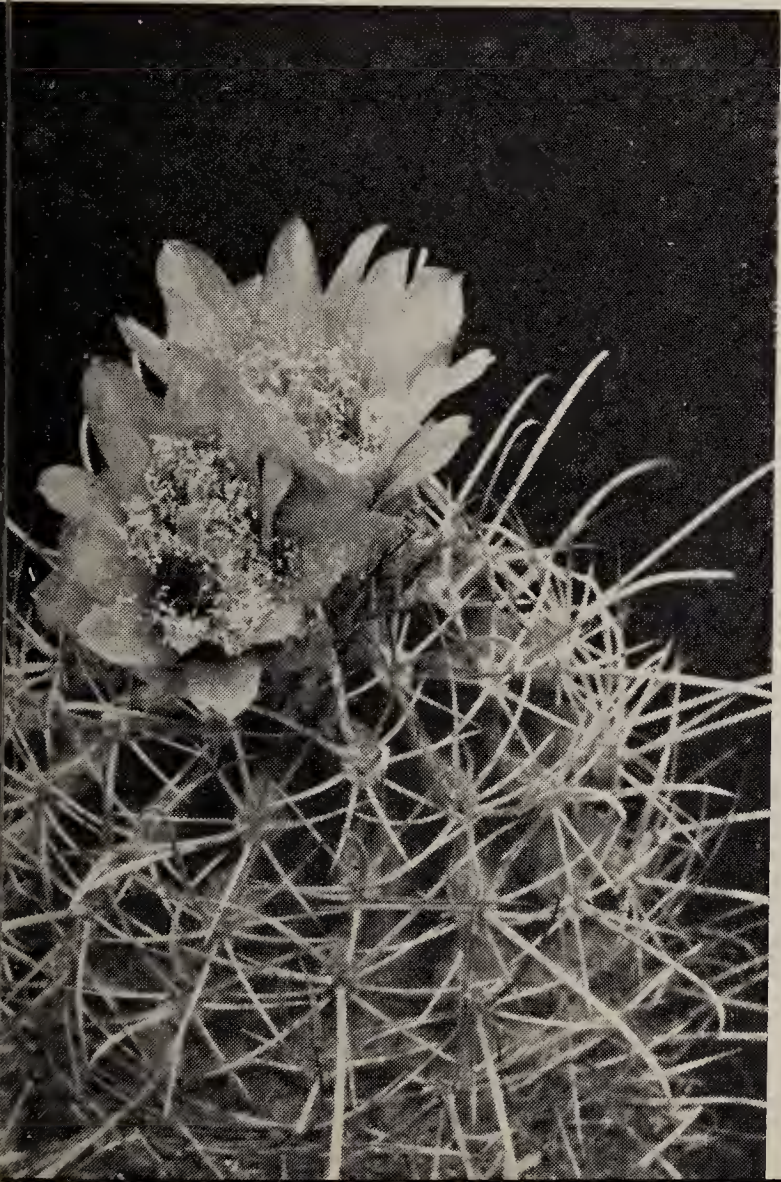
Restricted to Western Colorado only is the *Wide Cactus*, *Opuntia*

rhodantha, often but not always with rose-purple blossoms, and sometimes with yellow stamens. It takes careful scrutiny of ovary and areoles to identify it; and not mistake it for *O. polyacantha*.

And still we have not covered all opuntias. *Brittle Cactus*, *Opuntia fragilis*, is however different in that its joints are sometimes rounded and always loose-jointed. Any of these broken joints may hitch a ride by its barbed spines, and start a new colony in many an unwanted place. Pale yellow flowers do not help to make friends. A typical inhabitant of prairies and plains, that most of us feel we might very well do without. Whether *Opuntia rutila* will be accepted as a separate species, time will tell; it has triangular joints. So much for the flatjointed cacti, with either juicy or dry fruit.

Now for some "ribbing".

DEVIL'S CLAW CACTUS, *Echinocactus* or *Sclerocactus whipplei*, is a handsome purple ribbed cactus of Southwestern Colorado.



Even a seasoned westerner who has witnessed the miracles of an uninteresting messy cactus suddenly transformed into ethereal beauty, even he is overwhelmed by his first sight of a clump of *Ribbed Cactus* in full bloom. Dozens of scarlet or orange-red blossoms (depending on whether we see *Echinocereus triglochidiatus* or *E. coccinea*) light up a mound of ribbed cylinders, to be followed by red, juicy fruit. The time? Early June. The place? Both western slope and southwestern Colorado south of the same mystic line that stops the Tree Cactus ten miles north of the Arkansas river.

Common names for the scarlet *E. triglochidiatus* are *Strawberry Cactus*, *King's Crown Cactus*, or by SPN, *Claretcup*. *Echinocereus coccinea* goes by the name *Turk's Head*, *Heart Twister* or *Bunch-Ball Cactus*; its longer spined relative *E. Roemerii* is often called *Beehive Cactus*.

There is a purple-flowered *Echinocereus* in Southeastern Colorado, named *Purple Candle* (*E. reichenbachii* or *caespitosus*), and one close to the New Mexico border *E. fendleri*, much less conspicuous.

Few people pay much attention to the poor relative of all these gorgeous flowers, except the botanists. They point out that *E. viridiflorus* is found in abundance on plains and foothills of Eastern Colorado, that it is a quite inconspicuous and small plant (two inches) and that it hides its yellowish-green flowers half way under its sides. That is why it is called commonly *Hen-and-Chickens*.

All of this shows that a botanist is apt to look at plants from a different angle than the casual amateur. And so we need not be disturbed by the fact that he places two ribbed cacti in a group outside of the *Echinocereus*, because their flowers are borne on top of the plant.

Devil's Claw or *Braided Arrow* (*Echinocactus* or *sclerocactus whipplei*) is one of them. It is a smallish cylindrical ribbed cactus, only found in the southwestern corner of the state; it has purple flowers and a mean hooked spine.

In the same restricted area, near Cortez, Dr. Charles H. Boissevain found his new introduction, which he calls *Coloradoa mesae verdae*, "a small round cactus, pale gray-green in color, with yellow blossoms, pleasantly fragrant." Dr. H. D. Harrington, in his new flora, leaves it in *Echinocactus*, calling it *E. mesae-verdae* (Boiss. & David).

From here on our survey of the Colorado cacti represents an anticlimax. Our ball cacti are decidedly of the non-glamorous type.

Snowball cactus (*Echinocactus* or *Pediocactus simpsoni*) and its variety *minor* was mentioned above for its unusual mountain location. (pink flowers).

Two kinds of ball cactus with pink to pale purple flowers are plentifully found in Colorado; one for each slope. Abundant on the plains and foothills of eastern Colorado is *Spiny Stars*, *Mamillaria* or *Coryphantha vivipara*, described as early as 1813 by Nuttall (and a fantastic descrip-

The pink SNOWBALL CACTUS, Pin-cushion Cactus, or Mountain Cactus (Echinocactus or Pediocactus simpsoni) is the heaviest drinker of the Colorado tribe.

tion it was!) It blooms for a short time in June, on top of the ball.

Sour Cactus (*Coryphantha radiosa*), so called for the taste of the fruit, is more spiny and more upright, otherwise it is much like its eastern brother, so is often just classified as *C. vivipara*.

The *Missouri Cactus* (*Coryphantha* or *Mamillaria* or *Neobesseya missouriensis*) is a proper representative with which to close this list,—if our aim is to "fade away"—as recently advocated by some. Widely distributed in the foothills on both east and west slope, but nowhere abundant, with a yellow blossom fragrant but inconspicuous, and a 2 to 3 inch ballshaped plant, partly covered with rather untidy spines,—there is nothing very outstanding about this Missouri Cactus. Its scarlet berry popping up in April after previous year's blossom, will help to redeem it from utter "innocuity."

Let us not, however, end this on a negative note. The proper account of what has been called the "fantastic clan", the clan to which such unbelievable characters belong as the life-saving *Traveler's Compass* (*Ferocactus covillei*), the *Nightblooming Cereus* (*Hylocereus undatus*), the living fences, such as the *Organcactus* (*Myrtillocactus geometrizans*), and above all, the towering, dignified *Saguaro* (*Cereus giganteus*),—the account of even a minor portion of this clan might well end with an appeal to your most vivid imagination and to your subconscious emotion of wonder and awe of Life itself.

If you have experienced the desert, and if you have marveled at the glory of a cactus blossom, you will have caught something of the lure of this seductive and fantastic clan. As Madge Morris wrote in "Lure of the Desert".

"If you have not, then I could not tell, For you could not understand."



WE STILL NEED SOIL

CHARLES M. DRAGE,

Extension Horticulturist, Colorado A & M College

THE idea of growing plants without soils has fired almost everyone's imagination. Regardless of the name hydroponics, nutriculture, water culture, gravel culture or soilless culture, the fact remains that there are many false impressions as to its possibilities.

Garden enthusiasts range from the organiculturist to the chemiculturist. The extreme organiculturist may follow bio-dynamic methods and condemn the use of inorganic chemicals which supply plant food. The nutriculturist may vision food production on a practical commercial basis to the extent that our land may eventually be used for parks, recreation, preserves and super highways.

The truth is that the practical gardener will follow the intermediate path. Woodward in 1699 concluded "That earth, and not water, is the matter that constitutes vegetables." Plants require space, they require support, they require sunlight and they require the necessary elements with which through photosynthesis they can manufacture the food they need. The most practical method of gardening will continue to be the method by which all of these essentials can be supplied for the most efficient production.

Hydroponics has been and continues to be a valuable technical tool to help research find out what kinds and amounts of food plants need. It has commercial possibilities in greenhouses on ornamental crops where difficulties are encountered in obtaining large quantities of soil and manure or where specific problems of sterilizing,

watering, weeding or fertilizing may exist.

There was another use of hydroponics during World War II when our Air Forces used soilless culture at several isolated islands particularly at Ascension Island to produce fresh vegetables. This was because fresh vegetables could not be practically obtained by any other method and it was not safe to use the available soil or natural water supply because of pollution.

People interested in nutriculture must remember that the method is costly and needs expert supervision. The lack of horticultural skill cannot be substituted for nutriculture. Nutriculture demands knowledge of all factors of plant growth.

What results can be expected? Nutriculture does not solve problems of sanitation and it is rarely superior to soil culture. Plants cannot be spaced closer, their growth habits are not changed, they require just as much water and the nutritional quality of the product remains the same.

Where folks have small benches or only a few plants there are available for them many commercial nutrient solutions or mixtures which serve as stock solutions. From this stock solution the necessary quantity of nutrient solution can be made up every two weeks so that the solution the plants are growing in can be changed.

Several books and many papers have been written on nutriculture but with the exception of the scientist, and some commercial greenhouse growers, of ornamental crops, the method has little practical value.



Rock garden on sunny slope along ditch on author's property.

LOW BORDER AND EDGING PLANTS

By MRS. SUE JOHNSON

LOW, border, dwarf and edging plants are really something to fill one with delight. They are so satisfying and yet so very easy to use that one should be eager to try them all, but of course, not all at the same time. For early bloom have you tried Arabis or rock cress, which blooms in April—grows six inches high and is a delightful edging plant. Iris, dwarf varieties, bloom April and May and are tiny and wonderful spots of color. Phlox subulata is another good ground cover and wonderful in the rock garden. The geums, of sprawling habit in red and orange are also a bright note in the spring garden. Alyssum saxatile or Basket of Gold has a beautiful gray foliage and clouds of yellow bloom in May. It is certainly

a must for any garden and if cut back may give a little bloom in the fall. Armeria or sea pink has a small compact bloom. Cerastium tomentosum, which you may know as Snow-in-Summer is another prolific bloomer and gives clouds of white bloom in late May and early June. And, of course, the violets and violas—these are truly the easiest and most satisfactory of all to me, for I have tiny violas in bloom the year 'round and it's fun to go out in mid-December and January and find a tiny face looking up at you from some protected spot!

For mid-season bloom, try the Erigeron or daisy which blooms in July and is only eight inches high. Iberis or candytuft is another favorite as are

Huechera or coral bells, dainty red and pink blooms on long graceful stems, but the plants themselves are low on the ground. These give you the airiness and grace needed. There are the pansies, also, which are biennials but they sometimes act as perennials here. Dianthus—pinks or hardy carnations—bloom early and late if you keep the old bloom cut and they are so very fragrant, that I am sure you will want them for that reason alone. Then by all means, try the miniature roses. These are really something, when planted as specimen plants or in mass effects. I'm sure you all know them. Have you ever tried them in pots around the patio, or planted in masses around your outdoor living rooms?

For fall, of course, the chrysanthemums are the best known and possibly the best liked of all. The colors are breath-taking and all are easily grown. There is also, *Campanula carpatica* which grown in masses is very lovely—a cloud of blue and white. Possibly you know them as harebells.

And don't forget the mints, thymes, and chives near the edges for if these are bruised or brushed against there is an immediate burst of fragrance all about, which is delightful.

If you have a hot, dry, difficult

place to keep anything in bloom and want something really different try the Sedums. There are dozens of varieties, colors and sizes. They change color in all seasons, and they all bloom profusely. I have them on a hot, sandy, dry wall on the north side of our place which faces south and gets full sun, summer and winter, and they are truly lovely. There are the Trailing Sedums—Ewers, which has rosy bloom in August. For spots of color, Sieboldi has coral edged leaves which turn smoky purple in the fall. The tallest of the common Sedums is Showy Stonecrop—which is good for filling blank spaces when the tulips are through. All sedums are shallow rooted and won't compete with your bulbs. Try potting some for around your terrace. Ellacombe makes a leafy green spread which turns a gypsy red in cold weather and has orange yellow blossoms. Leafy Stonecrop has smoky pink blossoms on short stems. Spanish Stonecrop is another fast-growing sedum with brilliant green stems and tiny yellow starry blossoms, which are a delight.

These are but a few, but if you try them I'll guarantee that you'll love them and want every new variety you can find. Try them in arrangements and dish gardens.

With the successes and failures of the past season fresh in your mind, start now to plan for needed additions and improvements for next season. Put these ideas down on paper so that you will not forget them when spring comes around. Planning is part of the pleasure of gardening.

* * * * *

A garden may be beautiful because of its good plan, its good plants, its good maintenance, or better yet because of all three of these things. Neatness is the one thing that costs little and makes a great deal of difference. Take off the old bloom stalks and the plants that are entirely thru for the year. Trim back the rampant things that are lopping over the walks, but do not cut off green, growing stems unless you are willing to forego bloom the next year. Many plants, especially the bulbs like tulips, must store up energy for the next season's bloom by their growth after this year's bloom.



Silverlace vine over fence at Horticulture House.

PLANTS FOR THE BACK OF THE PERENNIAL BORDER

By MRS. HARRACENA NEWMAN

THESE plants which I am suggesting are nice for the tall background of your perennial border. Of course, these are only suggestions and not all should be used, nor are these all that can be used. Remember always to plant in groups for mass color effects and to prevent "spottiness."

For Spring the climbing roses and silver lace vine are nice, if you have a high fence, trellis or lattice work support. Try a grape vine also. When not in bloom the foliage of these are very attractive.

For a tall spike formation you might use delphinium. The range of color is rather wide; from dark blue to the very light blues, white, art shades to almost red. These may require a little more care than some plants; but repay in beauty. They may have to be staked if not protected from the wind. If the first bloom is cut to the ground, they will give

a second bloom later in the fall, but not as tall as the first growth. Foxglove or digitalis, which is a biennial, is very beautiful, about four feet high. Monkshood or aconitum comes in several shades of blue and blooms in July and August, as does Tritoma, or red hot poker as you may know it, which also combines nicely with the day lilies or hermerocallis.

For lacy mass effects the white daisy-like boltonia blooms late in August, as does the spireas, white astilbe, Japonica or pink astilbe, Davidii. These latter have plume-like flowers. These die back in the fall and make new growth each year. Their height is about five feet. Rich moist soil is best for these. For lovely foliage as well as for plume-like bloom, try meadow rue or thalictrum. It comes in light yellow or purple colors. Another is lythrum, which is almost a "must" in every garden for its lovely

spire of gay flowers. The tall white *ageratum*, *Valeriana*, is another in this group. Transplant the increase either in the fall or spring. I would recommend spring for this locality.

Don't overlook the tall lilies—white regal and the centifolium, which is a hybrid of the regal. Also, yellow *Henrii*, or the orange red tiger lily. All lilies are best planted in groups of three, five or more.

If you have room for the coarse foliage plants, such as the intense blue Chinese forget-me-not, *anchusa*, *helianthus* (one of the highly developed sunflowers) with their color range from yellow to almost red, the yellow yarrow, *achillea* and the steel blue globe thistle, *echinops*. All of these are excellent cut flowers and for drying for winter bouquets, the lovely steel blue and yellow combination together with the cone of the cone-flower, *rudbeckia*, are unexcelled.

For late fall bloom, the tall fall asters, *Michaelmas daisy*, and the tall *chrysanthemums* will give you a riot of color until snow. If you have a spot you wish to hide, either in your own or your neighbor's garden, plant some of the new hollyhocks. *Althea* is a beauty, and goldenrod or golden glow. Don't be afraid of hay fever, for they are not the guilty parties; the pollen from the rag weed can settle on any flower.

From your catalogues and garden books, select the colors and plants for the background that fit into the plan you have made. They should complement your home inside and out, and you.

SHINY LEAF YELLOWHORN

Xanthoceras sorbifolium

THIS large shrub is not well known in the area, yet it apparently is very hardy and easy to grow. The leaves, as the name indicates, are sim-

ilar to mountainash or sumac. It develops a rather coarse open growth a little like sumac. The flowers, as the picture shows, are rather nice and they are followed by chestnut-like fruits which give the plant its common name of "Chinese Chestnut."

Few nurserymen handle the plant so they are difficult to obtain. Specimens have been growing in City Park, Washington Park and Sunken Gardens for many years. When our new Botanic Garden gets going this is one of the sort of plants that will be made available for growers.



CHLOROSIS OF ORNAMENTAL TREES

BY L. C. CHADWICK,

Ohio State University, Columbus, Ohio

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* This is a very timely topic for our area. While it is written for the East it applies, with little modification, to our conditions. Dr. Chadwick is one of the leading tree experts of this county.—Ed.

ON SEVERAL occasions in the past, the results of experiments for the control of chlorosis have been reported. There has been a demand for the current recommendations for soil treatment. These recommendations are given below.

Chlorosis first appears as a yellowing of the leaves between the veins, gradually includes the whole leaf and finally causes a curling and dying of the margins. Further stages of decline cause a deformed and die-back condition of the branches. Chlorosis occurs more often in pin oak than other ornamentals, but it is not unusual to find it on sweet gum, some maples, azaleas and rhododendrons. (In Colorado it is often noticeable on Flowering Quince, Ninebark and Barberry. Ed.)

The cause of chlorosis is generally considered to be due to lack of available iron to the chlorotic parts of the plant. Several investigators have indicated that plants chlorotic from lack of available iron contain as much or more total iron per weight of tissue than do non-chlorotic plants. This statement points to the fact that certain internal conditions render unavailable to the chlorotic parts the iron already present in the plant. Iron may be present in the soil but unavailable to the plant because of unfavorable soil reaction. For the iron to remain available the soil must be quite acid.

Various methods of treating chlorosis of trees and shrubs have been

recommended. One of the methods that has been found to be satisfactory is soil treatment.

Recommended Method of Control

MATERIAL TO APPLY: A mixture of equal parts of Iron sulfate (Ferrous sulfate), finely ground sulfur, Aluminum sulfate, Ammonium sulfate.

RATE OF APPLICATION: Trees—2½-3 lbs. per inch in diameter of tree trunk. Use the heavier application for trees over 6 inches in trunk diameter and on high alkaline soils.

Shrubs—Applications based on pH of the soil. Apply 1½ lbs. of the mixture for each half pH above pH 6.0 per 100 square feet of bed area. The heavier applications can be used in silty or clay soils.

TIME OF APPLICATION: Early in the spring or as soon as the symptoms appear in late spring or summer.

FREQUENCY OF APPLICATION: Repeat the application in three or four weeks if improvement does not result from the initial application. Repeat again the following spring if chlorotic foliage develops. In high alkaline soils one or more applications may be necessary each year.

METHOD OF APPLICATION: Follow the usual methods of tree and shrub fertilization.

Broadcast: This method can be used for shrubs and small trees where the soil can be worked. The chemical mixture should be hoed and watered in.

Punch-bar: The use of a punch-bar or an electric or compressed air driven soil auger or drill is a common and

economical method of tree fertilization and is usable for treating trees for chlorosis. The chemical mixture should be applied in holes distributed evenly beneath the spread of the branches. Start the holes relatively close to the trunk of the tree and space them evenly, 15-18 inches apart,

over the area. Make the holes 12-15 inches deep. Distribute the chemical mixture evenly in each hole, preferably not over one-half pound per hole.

SUBSEQUENT MEASURES: An ample supply of moisture will aid in the stimulation of growth and give a quicker response to the treatment.



ROADSIDE BUSINESSES MAY BE BEAUTIFUL

THE above picture shows a very attractive roadside stop on the west side of Rabbit-Ears Pass. They have made use of their natural setting looking out over the beautiful Yampa Valley and designed this station to

fit into the landscape instead of making an ugly blot on the roadside. I am sure that this consideration for attractiveness and beauty will also be profitable to the owners and to the whole community.

A GOOD SE

By J. L.

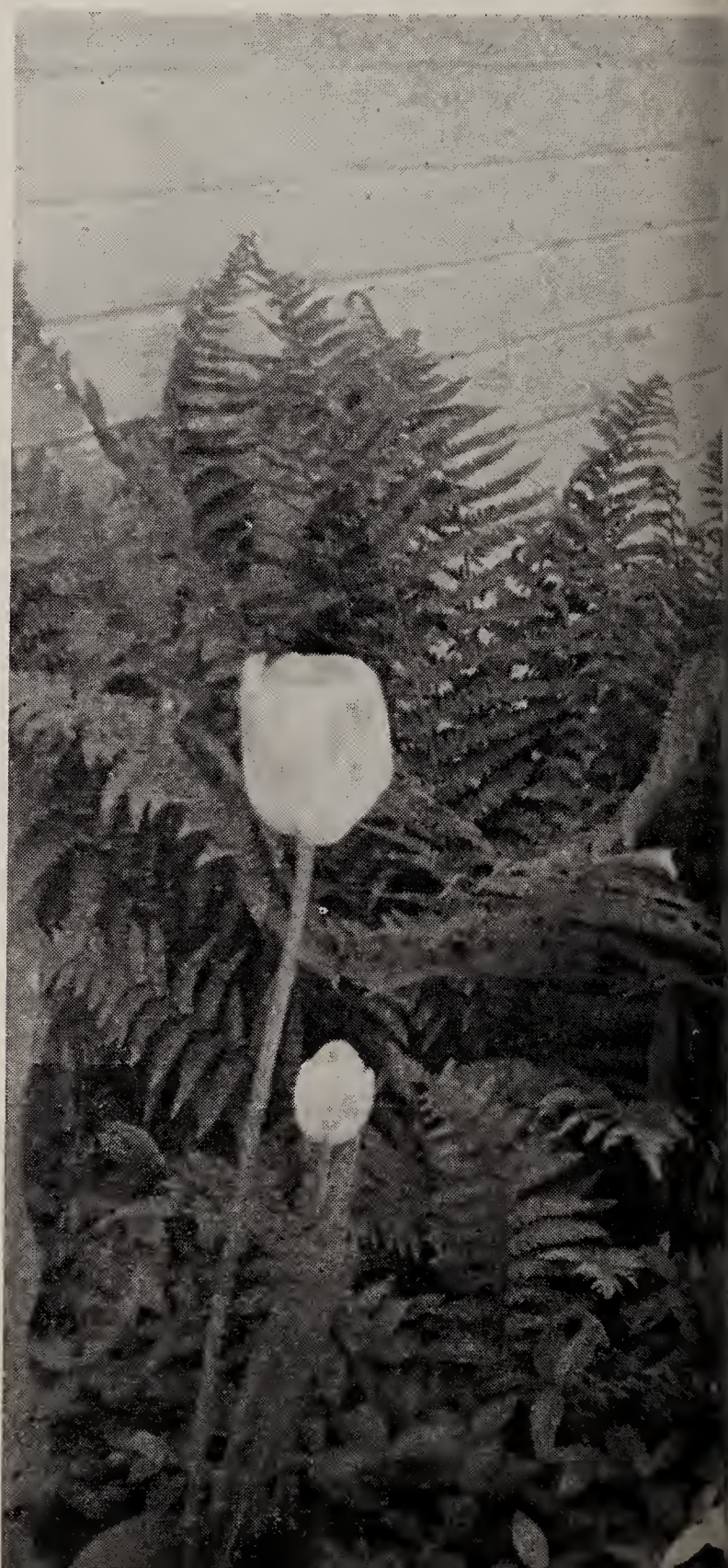


IS SELECTION of plants for north side areas really difficult? The pictures here show a sunless spot in Mr. P. J. Ferretti's garden near Sloans Lake. They were taken in the spring in bulb time. The Tulips were carefully selected from the Breeder type in tones of yellow, bronze, maroon-red and soft, pale coppery-orange; quite different in effect from others in the sunny parts of the garden. This fall, late, he will add botanical Tulips, *T. chrysantha*, *clusiana*, *greigii* and *persica*, all of low growth, which especially fit this situation.

Mr. Ferretti began his small north-of-the-garage planting with but a few ferns, Columbine and *Vinca minor*; last fall he added other ferns, ostrich lady, Colorado male and maidenhair. There was a little question about a *Clematis jackmanni* which started up the wall of the garage while an *Euonymus*, he wondered about, is shouldering its way up the wall also and growing with splendid vigor.

Many more plants that will endure shade could be used here if the width of the border were greater—*Funkia*, *Anchusa myosotidiflora*, Bleedingheart and the fernleaf *Spirea filipendula* with its fine white bloom. *Saxifraga cordifolia* would do well here, too. This saxifrage takes rank definitely at the head of all large-leaved plants and looks well associated with ferns.

With one of the few that knows the value of shade in a garden and with such a limited space to grow shade-loving plants, there is a hope that someday there will be more room for growing the fine Aconite, *Dicentra eximia*, *Lobelia cardinalis*, *Polygonatum* (Solomon's Seal), *Thalictrum* (low meadowrue), *Trillium* and so many others. Look out for the creeping buttercup, whose name quite



GARDEN

LER

inadequately describes its activities.

This small spot is watered carefully, but watering, anyhow, simple as it seems, is really one of the subtlest and most vital secrets of success in all gardening.

Although devoting eight to ten hours per day to his business, Mr. Ferretti still finds time to maintain one of the beautiful gardens of Denver.



Fingers in the Soil

From a story of The Children's Garden of the Brooklyn Botanic Garden.

BY FRANCES M. MINER

Often the idea has been expressed that every child should have a puppy. Every child should also have a garden, for only in the garden can he learn to evaluate the true importance of plant life. A puppy is a living thing, so is a plant. It is necessary to know something of both.

The challenge of successfully growing beets, onions, corn and tomatoes carries with it the deep satisfaction of individual accomplishment. This is more lasting than soup greens and salad. The ability to work hard either together or alone, to respect the rights and property of others and to have a good time on the job—these too, are part of the harvest.

DO YOU KNOW THE TWINFLOWER?

If you happen to have an acid-humus area (pH 5), and damp, this lovely *Linnaea* is ideal. It is a fast creeper, only a few inches high, with Azalea-like pink flowers. It is more or less evergreen and requires partial shade. You hear of this plant sometimes as deervine and also twin sisters. Named for Linnaeus. H. F.



WATER AS A GROWTH FACTOR

From Rotary Tillage Talks by Milwaukee Equipment Mfg. Co.
As Written by Alex Klose.

OF all the things which are part of our marvelous universe, nothing serves a wider range of usefulness than water in its varied forms. Because of its value and need, water covers more than two-thirds of the Earth's surface. This rather elementary fact, familiar to every grade school student, takes on an added importance and interest when considered in its application to gardening.

The large percentage of water—the river of life, in its everchanging forms, is an example of what might be called an over-worked miracle—so common, in fact, that often the miraculous in it is not seen. Actually, water is the vehicle upon which and whereby all physiological processes are dependent and made possible. This is just another way of saying—all life is dependent upon water and cannot function properly unless the correct amount is present at the required time.

Although water does not always have the same general influence as some of the other growth factors, it can be placed near the head of the list in importance. This is illustrated by the structural modification and adaptation of plants in their distribution, adjustment, and response to variations in the moisture supply. The difference in general appearance between the cacti of the desert and water lilies is far greater than that which is found between temperate or tropic zone species. Therefore, the cacti will not survive under swampy conditions, nor the water lily in the desert. This may at first seem so obvious as to appear ridiculous, and yet, a large number of growers actually provide almost desert-like conditions for the water-loving plants, and a

swamp-like environment for those, who in the language of the gardener, will not tolerate "wet feet".

To help understand how a lack or oversupply of water can become a limiting growth factor, it is necessary for the grower to have some knowledge of the basic part it plays in the life of a plant. Water is both an important plant constituent and a universal one, because there are no water-free plant tissues. The amount of water contained in the plant will vary with the species, the environment in which it is growing, and the season of the year. Usually, the harder the wood—the less moisture it contains. Oakwood, therefore, contains less moisture than willow—heart wood less than sap wood, and, as the dormant season approaches, or as the plant reaches maturity, the moisture content of wood and other tissues decreases. As a result, the moisture content of an apple twig in winter may be as low as 45%, while in summer it may contain 60 to 65%.

Early in spring the moisture content of the stem of a young rapidly growing tomato plant may be as high as 90% while two weeks later, after having been properly hardened for transplanting, it may be only 70%. Too often a consideration of the importance of moisture is limited only to the part it plays as a carrier of soil nutrients, with no thought being given to the absorption reactions which it brings about in the minute stomato openings in the leaf.

Most of the insect and disease control programs are carried on primarily to protect the leaf of the plant, upon which 90% of the final growth development is dependent. The idea of this leaf protection program can be

still further extended to include the thought that the grower is actually guarding the stomato, or breathers, which are part of every leaf structure. These breathers, or small openings, are designed to expose minute quantities of moisture to the atmosphere, from which they absorb carbon dioxide. This carbon dioxide cannot be absorbed unless moisture is present in large amounts and in a steady and constant supply.

Almost 50 gallons of water are needed to produce 1 pound of dry matter in corn. This suggests that unless 50 gallons are available to each corn plant, it cannot manufacture a normal amount of dry weight material, consisting of the nutrients brought up from the soil, and the carbon absorbed from the atmosphere. A normal moisture content of the soil is usually associated with steady rapid growth, tenderness and crispness in texture of the produce.

The hearts of celery, for example, are crisp because they contain more water than the fibrous leaf stalks of the same plants. String beans with a normal moisture content snap apart with a clean break under slight pressure. As a rule, home grown vegetables which are prepared for table use as soon as harvested are of higher quality, both in flavor and in food value, than those which are consumed several hours or days after picking. The difference in quality and flavor is very pronounced in such vegetables as sweet corn and peas, whose sugar content changes to starch almost immediately after picking.

The reduction in quality is due to moisture loss which sets off a series of chemical reactions affecting the flavor, the fiber, and the food value of the fruits. This suggests that care be exercised to maintain a maximum food value. Some thought given to the selection of varieties will result in

higher quality. Many types of small fruit, in spite of their favorable growth habits, might not be too desirable for canning or freezing purposes because of their high moisture content. This is especially true when ripening occurs during a prolonged rainy spell which has been preceded by a draught-like condition. Likewise, some strains of potatoes do not become mealy when cooked or baked because of the influence that moisture has on their starch content.

The winter hardiness of plants is very often erroneously associated with only the growth factor—temperature. This somewhat mistaken idea is perhaps the result of their catalogue description. Such listings represent the hardiness of a plant by stating that it is native to some far northern country where the winter temperatures may go as low as forty degrees below zero. As a result, gardeners conclude that because they live in an area where winter temperatures drop only to the zero point, or slightly below, such plants will survive under their conditions.

A selection of plant material based on such a conclusion is done without considering the relationships which exist between all growth factors. In this particular instance, moisture is largely the determining hardiness factor. This means, that in addition to temperature, all the processes which occur in the plant as a result of the type of soil, its moisture-holding and nutrient capacity, help to determine whether or not it will withstand even moderate winters. Therefore, the amount of water in the soil late in the season will have a bearing on the maturing or hardening of the tissues of the plants. Thus, the shoots of a raspberry plant, the twig of an apple, or the cane of a rose may contain 55% water in late summer and early fall, at which time they are very ten-

der and sensitive to cold. But, as the moisture content of the soil decreases in late November, the same plants will be able to withstand severe freezing because their moisture content has also been reduced 10 to 15%. This suggests that hardiness to cold is related to the water content of the plant tissues. However, the moisture content of the cells alone does not entirely determine the hardiness or the resistance of a plant to cold.

For example, a tomato, melon, or some other soft succulent type of plant may be killed by a temperature of thirty to thirty-two degrees, even though it contains less water than a cabbage plant, which is not permanently injured by temperatures of twenty to twenty-five degrees. Hence, more depends on the form or condition in which the water is held in the plant tissues than in its total amount or percentage; and, as a consequence, infers that all the links in the chain of growth factors team together.

Some of the water in the plant tissues is free—that is, it is a type of water in which very little or nothing is dissolved. Water of this classification is found in the form of thin films surrounding the cells and the cavities between them. This water within the cells occurs in two forms. One in which the various substances, such as the nutrients, are held in solution is spoken of as osmotically-held or bound water—that is, when it is combined with some of the chemical constituents of the cell to form a kind of jelly-like semi-solid mass. Sometimes this is referred to as colloiddally-held water. Only free water freezes at thirty-two degrees or slightly below; osmotically-held water at still lower temperatures. The larger the percentage of water held in the colloiddal form, the slower the freezing—meaning, of course, that less water is frozen

at a given temperature, resulting in a greater resistance of the plant to cold.

Ripening and maturing or hardening processes affect the rate of increase of the osmotically and colloiddally held water within the cells, thereby preventing them from freezing. The reason some plants cannot be materially hardened by the same process employed with other plants (namely, lowering the temperatures and the amount of water applied), is that these treatments have little effect in increasing the quantity of the colloiddal constituents.

Plants native to colder regions of the earth, therefore, cannot always be grown in other sections where temperatures are the same or higher, because the growth factor, moisture, and its relationship to all the others—temperature, nutrients, and the like, are not present in a desirable form or at a given time.

A consideration of the amount of water retained by a plant and the quantity required for average growth indicates its importance in the wonderful plan of Nature. An analysis of plant tissues indicates the presence of only small amounts of absorbed minerals. Under field conditions the exact concentration of minerals in solution is not positively known. For example, it is not known if an ounce of some mineral material added to a given amount of water is—or is not—in the proper proportion. For this reason some of the soil testing work which is done might be considered only as estimates. Very often low soil readings are obtained from fields which have produced average yields. Conversely, especially in greenhouse operations, poor plant growth develops from soil whose analysis shows a high plant nutrient content. These variations between the soil readings and plant growth are due largely to the amounts of water in the soil.

The huge supply of water required by a plant is related to its absorption of carbon found in the carbon dioxide of the air. After removing the carbon from the compound, it sets free the oxygen, a vital life-sustaining element. When this process takes place, a certain amount of energy is immediately released or stored for future use. All fuels are basically carbon products, made when green plants absorb the energy from the sun if moisture is present in the leaf cells. Thus begins the carbon-oxygen cycle, which points out and emphasizes that nothing on this earth is self-sufficient, but is dependent upon an endless number of cooperative helps established in a well balanced process.

One of the important contributing constituents of this process is soil and its physical structure which determines its moisture-holding capacity. The physical structure of soil is based on the percentage of gravel, sand, silt, and clay which makes up its framework. An examination of three broad classes of soil—a sand, a loam, and a clay will show how its physical structure is related to its moisture-holding capacities.

Spread out in the surface of four feet of an acre of moist, sandy, coarse soil there are more than forty-five square miles of water from which the root hairs of plants draw their requirements. A good loam presents 270 square miles, while the finest clay soils carry 1200 square miles of water per acre of field. From this wide range of surface it is easy to understand why there is such broad difference in the production capacities of various soils. This variation is due to physical or surface area only, even when the chemical natures are similar. A further examination of the soil surfaces helps to determine the productive capacity of a garden. The thickness of water layer left behind

in a sandy coarse soil twenty-four hours after a rain is only four to six pounds per cubic foot. The loam soils having a higher internal surface are able to retain from 24 to 50 pounds while the clay soils can hold as much as 35 to 40 pounds per cubic foot.

Much of the available plant nutrient of soils is in a soluble form. This suggests that soils of good physical structure when supplied with amounts of moisture equal to their maximum holding capacity will be the most productive. By the same token, much of this valuable plant nutrient material is lost from sand in the drainage which carries it to the ocean, or to underground storage beds, where future generations will discover it as fertilizer deposits.

The size of the soil particles is therefore related to the power of its retention of the water film which reduces loss of nutrients by leaching. Here again, the importance of proper physical soil structure is apparent, because it is structure which determines the amount of water which will remain. Any water which remains after the holding-capacity of the soil is reached permits the leaching of plant nutrients and upsets a normal biological activity. Although appearing contradictory, soils which drain poorly or slowly lose more of the soluble plant nutrients through under-drainage than those which drain normally.

The growth factor, moisture, assumes an added importance when a plant is compared to a complicated water works system which is continually transporting water. The roots of the plant might be considered as small conveying tubes which are centered in the stem and trunk of the plant, and the leaves as tiny nozzles which are constantly ejecting moisture into the air. An average size apple tree has hundreds of thousands of these minute spray openings in its leaves. The

amount of water which is transpired from the stomato openings totals an unbelievable volume. For example, if the corn patch growing in the vegetable garden would accumulate all of the moisture thrown into the air by the leaves, a five-foot deep lake of water would be formed at the end of a one-hundred-day growing season. Because water is such an important growth factor, 340 cubic miles of it fall every day on the planet Earth. This is equal to 16 million tons of water in the form of rain per second.

Because of the important functions of water in all stages of plant growth, it becomes necessary for the gardener to apply every available soil conserving principle. Among these are the use of mulching materials such as hay, straw, peat moss, wood boards, or stones. All these materials are beneficial not only because they lessen soil evaporation losses, but also because of their ability to condense moisture from the air. This condensation occurs because the same physical principles are involved as those which are associated with the dripping of cold water conducting pipes in a basement.

The moisture conserving program for next year's garden can be started this fall by incorporating compost manures and other organic material with the soil.

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Scientists claim — some, that is — that the time will come when there will be so many people on this earth that it won't be the efficient thing to grow beef for food. As a substitute in the future our great-grandchildren may have learned to relish algae, and deep-sea fishes. Both are found to be almost inexhaustible, and with pepper, chili sauce or tomato catsup, I suppose, most anything can be made palatable. Spinach, move over!

The Union of South Africa is already developing an algae industry along its coast. So far it is extracting alginic acid, a substance used in the textile industry for strengthening wool so that the fibers will not break on tight weaving. Alginic acid is also used for soaps, lotions, toothpaste, plastics and films.

M. W. P.

Sit down now and make a record of the successes and failures of your plants up to date. This will be invaluable when planning next January.

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THE CONTEMPLATIVE GARDENER

By JASON HILL

A NEW BOOK just received at Horticulture House, with 22 pages of drawings by that supreme artist of black and white, John Nash.

With such a visionary name, still this is strictly a practical book about gardening. It is a distillation of experience in the art of getting the most out of a one-acre pleasure garden. If you like to think and not follow some model of elementary instruction, you will enjoy this book, to open at any chapter; it could have been called THE ECONOMICAL GARDENER, for it is a labor, space and money saver, dealing with miniature wild gardens, miniature herbaceous borders, home-made plants, the technique of making rock gardens without rocks and of gardening without a garden to garden in. The author thinks he could have appropriately called his book THE WAR-TIME GARDENER, also, for the art of making a little money go a long way seems to be his concern.

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In the two chapters, "Something to Look at in Winter" and "The Evening Garden," both contemplative and comforting, you might gain some peace of mind, which is gardening's chief gift to man—a gift made infinitely significant in these times of war.

HELEN FOWLER.

CONTRACTOR'S SOIL

TAKE NOTE. With all these houses springing up everywhere, new gardens are being constantly made. It is very important to watch out for the blunders some builders often make. The good top of the original soil is often buried under a layer of solid clay or sand or gravel, dug from the foundations. Even garden builders are not always blameless in this respect; they will use any soil that looks good to surface the beds while better soil is left unused or, more often, buried under debris. A little digging will reveal these things and if it does take a little extra time to bring the rich, dark soil to the top, it will pay. I would never think it too much work to go down eighteen inches or even two feet to find the right soil.

H. F.

BLUE FLAX

Have you forgotten the blue flax (Linum perenne) for your garden? I keep looking for it but scarcely ever see it. It is of particular value in the perennial border because of its light grace, its azure blue flowers, and its delicate pale-green foliage. The flowers bloom only until noon in brilliant sunshine, but in cloudy weather remain open all day. You need not be afraid to transplant it now in clumps with soil on the roots.

H. F.



A SPANISH GARDEN IN PENNSYLVANIA

By JOAN PARRY

DIFFICULT growing conditions have often acted as challenging stimulation to gardeners; as a result they have created a very individual type of garden. A definite type of Spanish garden has developed from such conditions; a garden that is distinguished by its use of brick and stone for form and practicability, and by bright colored plants that are entirely in keeping with the landscape, and reveal also the Spanish love for privacy and color. Water is used in a score of different ways to add coolness and lightness in welcome contrast.

I shall remember for a long time a small Spanish garden I saw in Pennsylvania. It was a garden within the larger garden belonging to Mrs. Ran-

dall Morgan of Chestnut Hill, Philadelphia. Apart from its extraordinarily restful atmosphere it attracted my attention by the small space it covered, and the ideas it gave for small city gardens.

I cannot now remember its length, but it was certainly not more than 60 feet, but I do know its width because I paced it there, when I came on it one summer afternoon, and tried to linger as long as possible.

I stepped out of a small conservatory, through the glass door and the attractive iron gateway beyond, and looked down, past the small jet fountain at my feet, to the stone seat backed by evergreens at the garden's end. On either side of this central brick path, four feet wide, was a line

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of evergreens trained into arches, and close behind them was a low wall on which stood Spanish earthenware vases and pots full of pansies and multicolored calcelarias. From the brick path to the wall on either side it was but eight feet, so that the entire width of the garden was no more than 20 feet, two 8-foot borders of wall and evergreens and the 4-foot brick path.

Here was a garden that had been designed by an artist. Exact in every detail it was yet utterly simple, and had the great advantage of being of easy maintenance. Within that framework I could think of many other materials that could be used to suit different localities. In Virginia it might be box—in Colorado it might be juniper or pinion pine and pots of white petunias and geraniums. It was in fact an outdoor room, and within its framework or walls might be furnished with whatever material an owner might choose. There are few small gardens that I have seen so well furnished, so well designed and so easy of maintenance.

Try saving a few seeds of your really nice flowers. You can start them in boxes in the house next April.



EDWARD P. NEIMAN, IN MEMORIAM

*"Ere the parting hour go by
Quick, thy tablets memory."*

EDWARD P. Neiman was born in Pottstown, Pennsylvania, in 1877. He married Katharrynne Ely Beecher of Philadelphia, in 1904.

Coming West in 1906, as a health seeker, he and Mrs. Neiman went to a ranch near Albuquerque, New Mexico. Here, undaunted by his illness, he faced the vicissitudes of ranching with the same spirit of whimsical courage we came to know so well.

Greeted with the problem of milking a cow for the first time, his comment was, "I'm doing fine, but she won't cooperate." Faced with a flock of turkeys which, on a particular morning, reeled about his farm yard, he knew adobe for the first time. The turkeys had ventured into the moist clay till their feet became so balled that they could not stand up.

After four months of such adventures, however, he became convinced of two things; first, that ranching was not to his taste and second, that the West was giving him back his health.

He, therefore, left New Mexico and came to Denver where he resumed the work with which he was familiar and joined the staff of the Park Floral Co. when its greenhouses were at York and Colfax.

It is interesting to note that his entire life was given to one endeavor, so that his work, as the years went by, became both vocation and avocation, for, while carrying on a successful commercial business, he continued his production of new varieties of carnations, azaleas, and hydrangeas with notable success, and with consuming interest and pleasure.

In 1918 he and Mr. Gillis purchased the Park Floral Co. and a memorable association of 35 years began.

Through the observant eyes of a young confrere, we catch a glimpse of a man of varied capacity and resourcefulness. Here was the "Senorita", a carnation of outstanding color, size and beauty, but with a particularly undesirable habit. She grew always with a split calyx. Discard Senorita? No. Mr. Seiman made a clever little device which was clipped to calyx while the flower was in bud, then was removed and, with fitting economy, used again on another blossom.

The newest discoveries were tried and adventured with for good or ill. The first use of 2,4-D to kill weeds resulted in an expensive lesson. The Cathedral lawn was flawless, but a crop of chrysanthemums was lost, for the sprayer was washed, but not neutralized with the proper solution before using again. Not a word of complaint, but an experience gained.

At 72, his spirit was as venturesome as that of his young associate, at whose suggestion he built a new and revolutionary bulb cellar. Again an untoward accident. Before it was scarcely completed, it was destroyed by a pyromaniac. Never a word of recrimination or complaint.

It was this spirit of initiative and courage, coupled with kindness, which solved organizational difficulties and created opportunity for growth with a growing industry.

Thus came the merger of Park Floral Wholesale Co., Elitch Gardens Wholesale Co., and Colo. Flower Market, to become Park-Elitch, the organization of which Mr. Neiman was president for 13 years.

Hybridizing continued with outstanding successes and Colorado's carnations, among them his splendid deep

pink, Phyllis G., became widely known.

In the words of his young associate, "He had a good spirit, he was fair, honest and upright. He had an active mind and a youthful receptiveness to new ideas."

Edward Neiman conquered many obstacles in the course of his 72 years, but, having dominated the vicissitudes of ill health many times in his life, he met, at the last, great duress.

"If in the paths of the world
Stones might have wounded thy feet,
Toil or dejection have tried
Thy spirit, of that we saw
Nothing; to us thou wast still
Cheerful, and helpful, and firm."

And so this, with all the rest, we remembered, as we sat in the quiet of the Cathedral of St. John in the Wilderness, on June 4th, 1951, with the friends of so many years, and, together, bade a last farewell.

ANNA R. GARREY.

PARKS FOR LEARNING

Extract from the American Nature Study Society News Letter

One of the greatest potential uses of parks, and a non-destructive one, remains almost untouched. This is the opportunity to use these areas for education.

Visible from the window, around the corner, or down the street from many classrooms in which science suffers claustrophobia, are plots of park or unused land on which a whole pageant of nature's processes goes on undetected and unused by myopic or schedule-bound teachers. Not recognizing the wealth of material so near them, or being afraid of its complexity, they go on teaching science and nature largely as textbook topics, with only occasional digressions from the charted course when Jimmy brings in a shell from a Florida beach, or when a trusting robin raises its brood upon the classroom window sill.

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WE NEED TO TRAIN NATURE TEACHERS

By LEO F. HADSALL

Fresno State College, Fresno, California

Presented at joint session American Nature Study Society and National Association of Biology Teachers, Cleveland, Ohio, December 27, 1950.

AMERICAN educators face the problems of developing citizens able to get along with one another; and citizens who will utilize their natural environment so that it will furnish an ample sustenance for the present generation and continue to provide for generations yet to come. The first problem demands immediate and constant attention whether it be in a home, in a community, or in relations which involve nations. My primary concern is the problem of training citizens to get along with their environment and to use it in wise fashion. I am concerned with the problem of teacher training.

The student of nature study, the ecologist, is conscious that human life, like other forms of life, is limited by environmental factors. We are "bound" to the soil. The central valley of California where I am located is limited in its development, agriculturally and otherwise, by the water which may be supplied through irrigation. The future population will depend in large measure on the extent to which an adequate supply of good water may be provided. Water is an essential component of protoplasm. Protoplasm is the basic substance of which living things are composed.

We have seen increasing evidence of natural science instruction in public schools; but recently there has been a trend towards emphasis on generalizations. Many of these are supplied in textbook form and they

are being parroted throughout our public schools. Is this sound instruction? I think not!

We cannot attack the problem of conservation education solely through the printed page. Children need specific, primary, sensory experiences more than they need vicarious experiences and generalizations. Generalizations are in the majority of cases partial truths. To provide children with numerous specific, primary experiences we must concern ourselves with training teachers to explore and interpret the immediate environment with their pupils.

Alert, well-informed, skillful teachers are a prime requisite for effective public education. But they must also have a desirable point of view as emphasized by Liberty Hyde Bailey in "The Nature Study Idea." Their skills must include teaching the fundamentals but they will ease their tasks and increase their effectiveness if they approach these through studies of their immediate environment. Teachers need to become acquainted with resource persons as well as areas. They need an adequate supply of instructional materials pertinent to local areas. Soil conservation problems in northeastern Pennsylvania may be very different from soil conservation problems on alkaline lands of portions of the San Joaquin Valley. In cooperation with resource people teachers may develop practical educational materials which will be useful in the hands of children.



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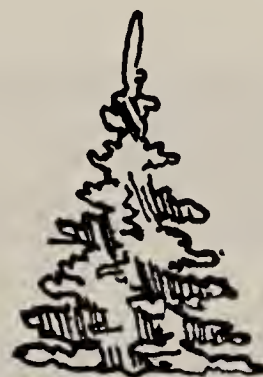
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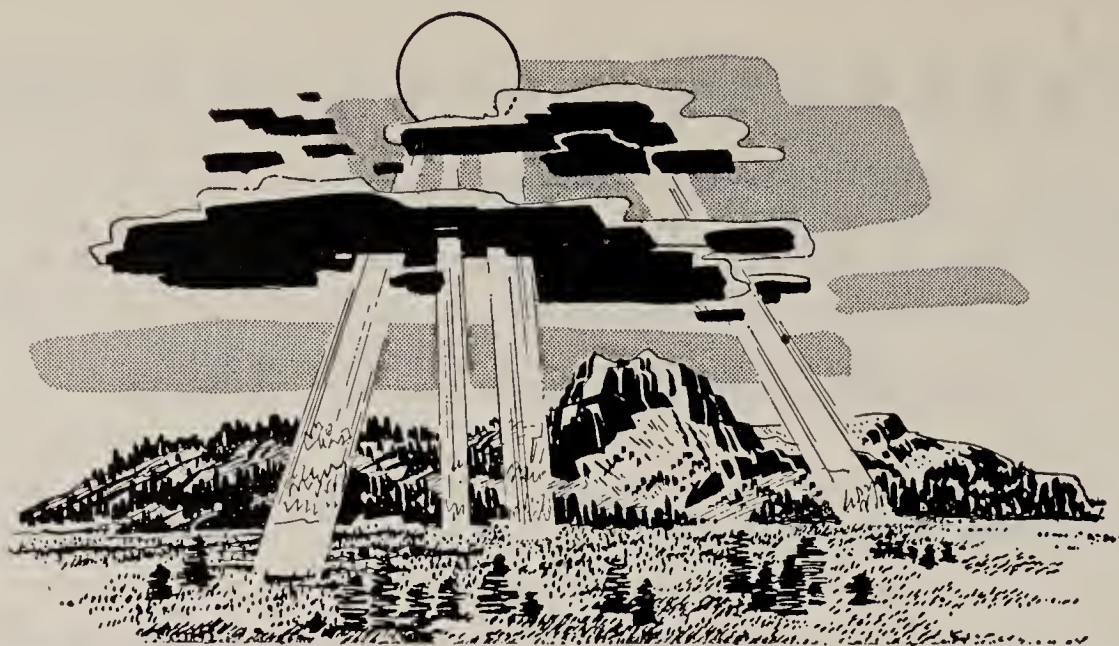
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AUGUST GARDENING

AUGUST is usually hot and dry. Plants which have been properly trained by careful and thoro watering will survive this critical period, but those which have been pampered with daily, shallow watering are sure to suffer. Toward the last of the month it would be proper to begin to hold off the water a little on the woody plants so that they might begin to ripen up their wood ready for the frosts next month.

* * * * *

Do not let down in your war on garden insects and diseases. The large red aphids are likely to be on your Goldenglow and Goldenrod. Perennial Phlox may be losing their lower leaves. Dust with sulphur to control both rust and red spiders. Aphids may be sucking the life out of your Delphinium, Columbine or Spirea bushes.

* * * * *

Any necessary trimming to trees or shrubs may be done now as well as any time.

* * * * *

Your tulips are completely dormant now. Some of the old top may still be present to show where they were. If they bloomed well this spring they should be left alone. If they are weak and appear to have divided into many small bulbs, it is time to dig and divide them. They do not need to be kept out of the ground until fall, but may be replanted at once. Put them in about 10 inches deep in a partly shaded place, for best results.

* * * * *

Weeding should not be such a problem this month. Most of the weeds should have been cleaned out weeks ago. We should be able to let down a little on our continual round of "weed and water, weed and water". The greatest danger now is that we will let a few weeds go to seed and spread seeds for next spring. Later in the month some gardeners advocate letting a few low weeds creep in to help dry up the soil and ripen the plants around them.

* * * * *

Now is the time to move Oriental Poppies, if that should be desirable. They are dormant now, but will begin new growth in September. Even a small piece of root will often start a new plant. Plant them in large masses where they may be seen at a distance.

* * * * *

With the routine garden work letting up a little, now is the time to do those things that were neglected earlier—level up the flagstone walk, nail back that loose panel on the fence, patch the crack in the pool, paint the trellis, trim the dead out of that old Lilac or edge the borders.

* * * * *

This is the time that your garden looks empty and colorless unless you have planned in advance for the heat loving things to fill in the gap between the early and late flowers. Even the best planned perennial border needs a few of the summer annuals to fill in at this difficult time. Petunias, Zinnias, Calendulas, Marigolds and Four-o'Clocks are all common flowers, but they enjoy this heat and require little care.



The Green Thumb

SEPTEMBER, 1951

A REAL GARDENER'S GARDEN

WILDFLOWERS FOR OUR GARDENS

A SAN FRANCISCO GARDEN

WILDERNESS AREAS OF COLORADO





MY GARDEN

Now God has made my garden bright
With flowers of every hue,
With fruited trees and birds that sing,
For me to share with you.

Gertrude Ballinger.

The Green Thumb

Vol. 8

SEPTEMBER, 1951

No. 9

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*Picture on Front Cover and inside Front Cover from the garden of
Mr. and Mrs. Henry J. Conrad at 4741 Pierce St.*

Poem The Rose, used by courtesy of Home Garden Club and American Rose Society.

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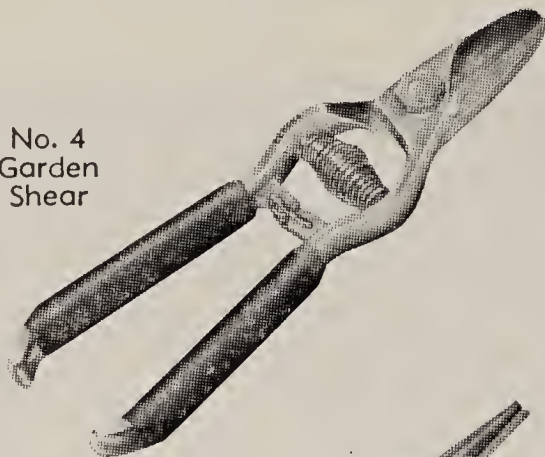
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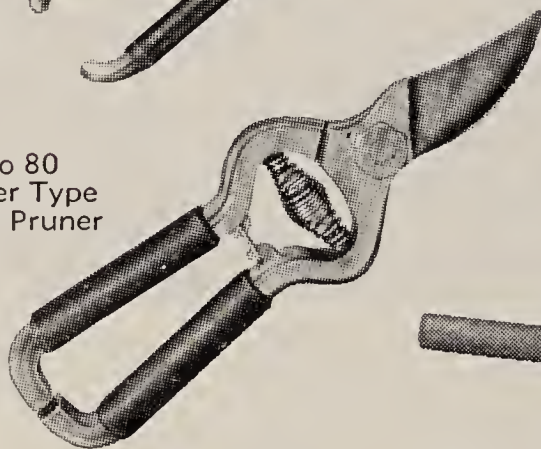
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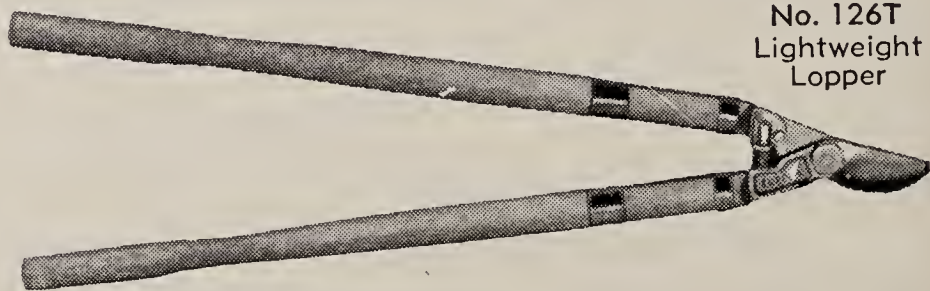
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September Schedule

- Aug. 31-Sept. 1, 2. Friday, Saturday, Sunday. Pack trip into Wheeler National Monument near Wagon Wheel Gap. Mary Lou Cox, leader. Call for details.
- Sept. 8, 9. Saturday, Sunday. Postponed Mt. Meeker Climb. Leave Horticulture House 2 p. m. Take overnight equipment.
- Sept. 16, Climb of Bancroft and James Peaks from the Glory Hole. Call for particulars.
- Sept. 13, Thursday, 8 p. m. Rose Society meeting at Horticulture House.
- Sept. 20, Thursday, 7:45 p. m. at Horticulture House. Showing of pictures and slides of River Boat trip in July.
- Sept. 23, Sunday, Climb Red Cone Peak from Montezuma Basin.
- Sept. 30, Sunday, Trip up South Boulder Creek from East Portal. Call for particulars.

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*"The kiss of the sun
for pardon
The song of the birds for mirth
One is nearer God's heart
in a garden
than anywhere else on earth"*

A REAL GARDENER'S GARDEN

THE garden of Mr. and Mrs. Henry J. Conrad at 4741 Pierce is a real gardener's garden. Conspicuous are places for rest yet the garden shows that someone puts a lot of work in it—loving work—for no garden looks as this one does without love.

This garden can not be seen at one glance for it is composed of many interesting parts. The bed of roses attracts the eye first of all, for they are fine roses, then the bright perennials bordering the whole area and stuck in nooks about give attractive splashes of color all season.

As one wanders about this garden he will discover unusual plants in unexpected places, little nooks with planned color combinations and experimental plots of various kinds.

Of the many features that make up this garden the "well" is probably the most attractive. This well housing covers an actual well which can be used when necessary. The inscription over the well which is reproduced here expresses the spirit that pervades

the whole garden. A wide comfortable couch under a shady tree, a barrel seat in a cool nook, a formal seat with a lattice background all suggest that a garden should be enjoyed, and that rest should alternate with work.



The fireplace and picnic table occupy an area of their own where they are screened from the street but where the garden and the house can be easily seen. A fine old birch tree dominates the whole scene, and it appears that the garden is built around it.

While this garden is in a community of gardens and nice homes, still there has been a careful planting of screen trees and shrubs which hide all conflicting views and emphasize good views.

Here is a garden that is lived in and loved, a garden of good taste, a satisfying garden.





Yellow Violet, Viola nuttalli and Sand Lily, Leucocrinum montanum.

A SUMMING UP

By CLAIRE NORTON

AFTER nearly twenty years of growing the Colorado natives for fun and profit, we have reached the point of summing up the garden possibilities of the many we have given a trial or closely observed with a gardener's eye. Disregarding the larger

shrubby and tree material, of which we have such outstanding garden subjects as the Colorado Blue Spruce and the Scop juniper, and the ferns, of which Colorado Male Fern is one of the best of all garden ferns, the herbaceous and some low growing woody natives have yielded us years of fascinating observations.

*Snow Lily (Dogtooth Violet),
Erythronium parviflorum*



Beginning at the front of the Coulter-Nelson Manual, the Arrowhead, *Sagittaria*, offers an excellent poolside and pool plant. When used in the pool it should be confined to a pot or tub to hold its spreading habits in check.

Of the Lily Family, our early spring Sand Lily makes a nice garden addition, along with the crocuses and squills, and is not too hard to grow. *Allium brevistylum* is a handsome large onion with real garden possibilities. Our one true lily, *Lilium montanum*, belonging to the upright cup group, is one of our rare natives which never should be collected for the garden despite its beauty. The Dogtooth Violet, *Erythronium*, which makes late June so delightful on Rabbit Ears Pass, certainly can be considered for spring bulb gardens. Mariposa Lily,



Calochortus gunnisoni, is a worthwhile bulb flower. For a dry garden the bold Yuccas have possibilities.

A fool-proof native is the *Iris missouriensis*. Varying in color from white, through light blue and bluey-lavender to deep blue, this is a plant which will thrive anywhere. Several color forms have been segregated, such as Snowbird, pure white, Blue-

Left: Wild Onion, Allium. From painting by Emma Ervin.

Below: Blue Flag, Iris missouriensis.



Mariposa Lily, Calochortus gunnisoni.





Marsh Marigold, Caltha rotundifolia.

bird, deep blue, and the deepest, richest blue of all which we named Tarry-all some years ago. For the rockery our native Sisyrinchiums, Blue-Eyed Grass, offer some nice material.



Green Orchis, Habenaria hyperborea.

Globeflower, Trollius albiflorus.



Terrestrial orchids have a fascination for the gardener willing to meet their requirements, but none of our natives are for the casual gardener. With the right conditions, *Cypripedium parviflorum* puts on a fine garden show. Calypso defies the efforts of the best gardeners. *Spiranthes* and the several bog orchises, *Limmorchis*, are possibilities for the shaded pool-side.

The *Eriogonum* genus is large and variable. Some of species take well enough to cultivation and are good in the rock garden. The only *Portulac* of garden value is *Tilinum parviflorum*, a pretty little rose-pink flowered, dry soil native. Some of the *Arenarias* of the Pink Family have possibilities for carpeting between flagstones and for the rockery.

Out of the *Ranunculaceae* come some of our showiest natives, and some of our best for the garden. *Caltha*, Marsh Marigold, and *Trollius*, Globeflower, both plants of moist subalpine woods, will do with moraine culture. Everyone knows, and nearly everyone grows, the Colorado Blue Columbine, *Aquilegia coerulea*. It is readily started from seed collected in



Red Columbine, Aquilegia elegantula.

late summer in the mountains. A dear dwarf is the *Aquilegia saximontana*, whose name literally means Rocky Mountain *Aquilegia*. Of the same general coloring as its larger relative, but with hooked spurs on thumbnail size flowers, this is one of the most precious garden plants to come out of the Rockies. The much confused

Rocky Mountain Columbine, Aquilegia saximontana.





American Monkshood, Aconitum columbianum.

Alpine Poppy, Papaver radicatum.



Delphinium genus has some extremely handsome species, but *D. nelsoni* possesses the most beautiful blue of the entire group. It makes a nice cutting flower for low arrangements.

Our Monkshoods, *Aconitum*, like most shaded conditions. The Pasque Flower can be, but seldom is, garden grown. The Bush Clematis, *C. hirsutissima* and its variety *scotti*, should not be overlooked. If it were not such a rampant grower, our *C. ligusticifolia* would compare very favorably with the Autumn Clematis, *C. paniculata*. The same can be said of our native *Thalictrums*, most of which need a lot of room for development.

The Colorado Rockies can boast of but one true Papaver, and it is one of our rarest plants, the *P. alpinum* of the Coulter-Nelson Manual, now considered *P. radicatum*. A wee thing in its high native haunts, under garden cultivation it makes a good bushy plant loaded with dainty yellow poppies. It is not too difficult to establish from seed when treated as its closest relative, the Iceland Poppy, *P. nudicaule*.

If you live near enough to the foothills you are likely to find a tiny filagree of silver leaves among which nestle dainty yellow blooms showing up in your garden. Pet it along for you have a dear little plant, our native *Corydalis* which makes itself quite at home in the garden.

Some of the Mustard Family are well worth growing in the garden, the striking yellow *Stanleya*; the higher altitude Candytufts, *Thalspi*; Bittercress, *Cardamine*, if you have a poolside or tiny brook; the Lesquerellas in a dry rockery; the Drabas if you are an alpine enthusiast; and the several Wallflowers, *Erysimum*. The Cleomes of the Caper Family have received a "college education" and come back to our gardens as well behaved cultivated plants. The wild

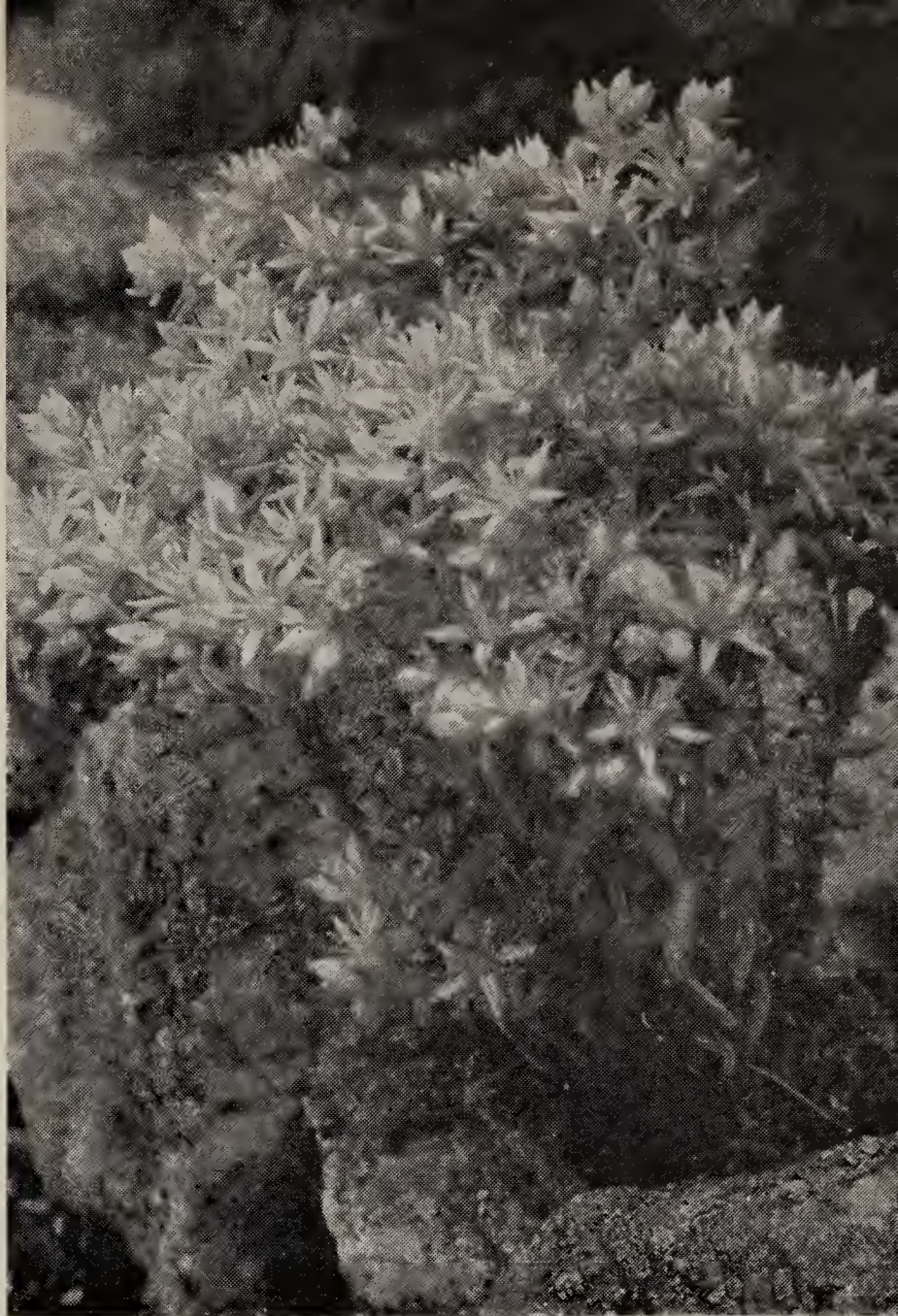
yellow Cleome of the western part of the State is handsome in itself.

Any one of our three sedums is worthy of cultivation, but the Yellow Stonecrop, *S. stenopetalum*, is a honey for the dry rock wall. Many members of the Saxifrage Family, too, deserve cultivation, but many of them are only for the alpine fan. Perhaps the easiest, as well as showiest of the Saxifragaceae is *Boykinia jamesi*, but which has been hanging on for nine years in our Laporte garden without producing a bloom. Some other gardeners have had better luck with it. *Saxifraga rhomboidea* (or *nivalis*), and *S. austromontana* are both good dry rock wall plants of fairly easy culture.

*Upper Right, Yellow Stonecrop,
Sedum stenopetalum.*

*Lower Right, Snowball Saxifrage,
Saxifraga rhomboidea.*

*Below, Purple Saxifrage,
Boykinia jamesi.*



Since we are skipping most shrubby material in this summing up, only *Sieversia ciliata* is coming in for honorable mention out of three large families, the Hydrangeaceae, the Rosaceae and the Pomaceae. This is, however, a pretty little garden subject. Some of the *Potentillas* are pretty enough, but most tend to weediness under garden conditions. *Dryas octopetala* of the Rose Family simply refuses a garden diet.

If most of the Legumes were not so common from plains to higher mountains, we Colorado gardeners would enthuse over such as *Thermopsis* and Lambert's Loco and some of the *Trifolium* and *Lathyrus* members. The same can be said of the Geranium Family, which has some nice things. Our native Blue Flax has even a better color than the cultivated variety we ordinarily grow. And if it weren't so weedy, what a garden subject Snow-on-the-Mountain *Euphorbia* would make!

One shrubby plant we must consider in this summing up is *Pachystima myrsinites*. The Eastern member of this genus is highly recommended to replace boxwood where the latter is not hardy. With the conditions under which our *P. myrsinites* thrives in its native habitat, it is well worth trying here for a low clipped hedge, say around a rose bed or along a walk.

Our Colorado violets offer the adventuring gardener some interesting material. *Viola pedatifida*, the Bird's Foot Violet, is exceptionally good. Under cultivation, the *Viola adunca* group produces as pretty plants and flowers as any violets in the world. Any of them are worth trying if you don't go crazy trying to figure out which is which!

If you want Cactus, our natives offer some of the most interesting and showy of species. Not many of the



Above, *Pyrola*;

Below, Wild Pink Geranium.



Evening Primrose Family seem to rate cultivation, but the showy Sundrops, *Lavauxia*, should. The Fragrant Evening Primrose, *Pachylophus*, could be grown in the after-sundown garden to advantage. We cannot think of a plant in the Umbelliferae to which we would offer garden room. And while they are all beautiful in their native haunts, particularly the Pipsissewa, *Chimaphila*, the Pyrolaceae as a family are too difficult to satisfy. The same can be said of the Heath Family. *Kalmia*, *Gautheria* and *Arcostaphylos*, Kinnikinnick, are better left to grace our mountains.

Most of the native primulas are hard, but *P. incana*, our representative of the Birds' Eye Primrose, is a real find. Shooting Stars, *Dodecatheon*, are easy, requiring little care. Gentians, as a family, are somewhat difficult, but the little *Gentiana romanovi* from mountain tops will ever intrigue the alpine gardener into giving it some space.

We do have a lot of Phloxes in the Rockies, but the best for the garden is probably the pink *P. longifolia*. *P. multiflora*, when well grown, can put on quite a show. *P. patula*, the prettiest of all, has not proved easy for us. Of the Phacelias, *P. sericea* has the most garden possibilities. If

Shooting Star, Dodecatheon radicans.



Bird's Eye Primrose, Primula incana.

the forget-me-not flowers of *Lappula* were not followed by nasty little burr-like fruits, members of this genus would make good border plants. *Eritrichium argenteum*, the most precious (to us) of all our natives, should be left on the highest mountain tops where one must climb long and arduously to enjoy its breath-taking beauty. *Mertensia ciliata* compares favorably with the Virginia Bluebells as a garden subject. Some of the other

Arctic Gentian, Gentiana romanzovi.



Red Beardtongue, Penstemon torreyi.

Mertensias merit the attention of the rock gardener if ever the taxonomists unscramble the genus so we know which is which.

The showiest genus we have in the Colorado Rockies is that of the *Penstemon*. The best for garden cultivation out of this large group we have ever found is a dwarf, mat-forming species, *P. crandalli*. Beautiful but not so easily grown is *P. harbouri*. Most of the tall Beard Tongues should be treated as biennials or short-lived perennials. They are readily started from seed, but once they begin flower production, they literally bloom themselves to death. Young plants to replace the old should be kept coming along.



Penstemons:

Upper Left, Dusky Beardtongue,
Penstemon stenosepalus;

Right, Penstemon secundiflorus;

Below, Sprawling Beardtongue,
Penstemon crandalli.



Our *Campanula rotundifolia*, Harebell, makes a truly good garden plant and thrives without special attention. It is lovely both in the rockery and in the forepart of the border. *C. parryi*, much more difficult to grow, is quite different in appearance and enticing.

All of which brings us to the last family group in the Coulter-Nelson Manual, the immense Compositae, some of the members of which are the worst weeds we have, and some of which are very acceptable garden plants, Blazing Star, *Liatris*, for example, has good possibilities; the Golden Asters, *Chrysopsis*, are pretty; the *Townsendias* are much sought after; our high mountain Asters and



Above, Harebell

Lower Left, Cone

Lower Right, Colorado

Below, Easter

About half of illustrations used here by R. J. Niedroch, Emma Irvin and





Erigerons offer species well worth growing; Kitten-toes, *Antennaria*, are charming small plants; our *Anaphalis*, Pearly Everlasting, should be in cultivation. *Melampodium cinereum*, Colorado Rock Daisy, is a fine rock garden plant, as is *Crassina grandiflora*, our nearest approach to a zinnia.

Black-eyed Susan, *Rudbeckia*, and Coneflower, *Ratibida*, are easy enough to grow. *Wyethia* is one of the showiest of all, but judging from its distribution over the north central part of the Western Slope it could be a serious weed pest. Woolly *Actinella*, and the closely related *Rydbergia grandiflora*, Sun Gods, are showy enough to tame. And there are *Arnica*s and *Senecio*s which promise garden value.

na rotundifolia.

Ratibida columnaris

Melampodium cinereum.

usendia exscapa.

original photos by Mark Norton, others



CONSERVATION OR RESTORATION?

By RICHARD H. D. BOERKER

(Reprinted by Permission of the Author and the Editor of
THE LAND Magazine)

ANY good dictionary will define "conserve" as "to preserve from injury and destruction." Therefore, "conservation" is really "the act of keeping from decay, loss, or injury."

If "conservation" actually means "to preserve from injury and destruction" we are much too late. We should have gotten the idea about a hundred years or more ago. At that date the word would have fitted the situation for we really had something to save. Today we face an almost empty larder. Obviously, what we need to do first is to restock the larder—the forests, wildlife, soil, grass, water, etc.—and then formulate a plan to use them wisely so as to perpetuate them. We cannot conserve what we have not got.

It is surprising how many people, even at this late date, have the idea that timber should not be cut nor should we kill deer, bear, elk, and other forms of wildlife. Of course, if the term "conservation" really means "to keep from decay, loss, and injury" the above is a perfectly obvious conclusion to draw. As a result, conservationists have been labelled idealists and enemies of progress and development. We will have to discard that notion of saving resources, and spread the idea that after we restore our lands to somewhere near full capacity, we can save our natural replaceable resources only if we harvest the annual increase. Cutting the mature trees and killing the yearly increase in wildlife is a very necessary part of perpetuating our resources, paradoxical though it may seem.

Two conspicuous manias have obsessed Americans under the guise of "conservation": drainage and dams.

We drain the marshes ostensibly to conserve or make new agricultural land but often find the soil too full of alkali to use, so we reflood it. In the meantime our wild water fowl receive a severe setback. We aim to conserve water and prevent floods by building dams, thereby flooding lowlands, ruining the nesting areas of water fowl, and ruining the trout fishing. After we cover the level, fertile bottomlands with water, we cultivate the steep erodable hillsides and thereby head for more trouble. In any case, what aims to be "conservation" ends up by seriously disturbing local biological patterns with ultimate results we cannot now foresee.

Do we want to "conserve" our depleted and eroded agricultural lands from injury and destruction, or do we want to "restore" them to their former usefulness? We can conserve soil by stopping erosion, but even this is a matter of establishing or restoring the proper vegetative cover, or by employing modern land-use techniques. Certainly the so-called "conservation" of soil in the Dust Bowl is a matter of "restoring" the grass cover. Leached and washed out soil can be brought back by "restoring" the fertility either by natural or by artificial fertilizers.

Water is the keystone in the arch of resource management. If we have water, we have vegetation and if we have crops, grass, forests, we will have food for animal life. If these are restored where each ought to be, then erosion and floods are for the most part checked. The entire question of erosion and flood control is largely a matter of restoring the kind

of vegetative cover best suited to the soil and slope.

The average Westerner thinks that a big job has been done in irrigating the dry lands of the West. We agree. While an important job has been done, I am not so sure that it can be called "conservation." What most of them don't realize is that the continuity of adequate irrigation water is entirely dependent upon restoring the grass and forest cover of the watersheds furnishing the water. To our sorrow, we have learned in many cases that the deposit of erosion debris makes the reservoirs and irrigation works useless in a comparatively short time. So water "conservation" in this case should really begin with vegetation "restoration."

The real task ahead is the building up of our resources capital so it will pay adequate dividends to future generations. In its more serious aspects it is a fight for man's very survival. If that is so, it behooves us to get a modern interpretation of the restoration concept, know exactly what it is that we want to restore, pass the necessary legislation, and spread the good word as to how it is going to be done.

SOME NEW INSECTICIDES ARE DANGEROUS

Recently city health officials have again called our attention to the fact that some of the new insecticides are very dangerous when handled by humans. Quoting from a bulletin of the U. S. Public Health Service, referring to Parathion and TEPP (tetraethyl pyrophosphate) they say:

"Careless handling of the concentrates is particularly dangerous, but even the mixture diluted for use and the dusts which are applied as purchased contain poison in concentration which are highly toxic to man and are dangerous if improperly used.

"These materials may be absorbed by inhalation, ingestion, absorption through the mucosa of the eyes and through the skin. They act as nerve poisons. Symptoms of poisoning may include headache, excessive sweating, giddiness, blurred vision, weakness, nausea, cramps, diarrhea and discomfort in the chest. The effects of organic phosphates are additive."

These materials are very effective against some of the difficult pests such as the spidermites, but great care should be used in handling them.

WHY WEEDS SURVIVE

The notorious crabgrass survives under all difficulties while a blue-grass lawn may disappear even though it was thought to have had good care. Buffalo-burrs will thrive where their cultivated relatives—potatoes and tomatoes, do not bear fruit. Downy brome grass chokes out more desirable plants all over hills and meadows while diseases threaten related grain crops. WHY?

These wild plants we call weeds survive because they are the natural result of survival of the fittest. The weaklings have died and those that have lived are strong and able to take conditions as they find them.

We take similar plants and select them for size, or color, or time of maturity and coddle them for generations to breed them for a specific characteristic. Then some disease or insect comes along or difficult conditions set in and the plants do not have the ability to resist.

Unfortunately, we find many plants which have been given "college educations" have lost much of their natural resistance and are the ones which succumb to all manner of pests.



A SAN FRANCISCO GARDEN

By JOAN PARRY

SAN FRANCISCO is a flower-loving city, and is famed far and wide for the flower stalls along the sidewalks and the superb displays in the florists' windows, sometimes changed twice in one day.

You might think from this that San Franciscans would buy, rather than grow, their flowers, for as everywhere else, labor is scarce and high. Nor is the summer climate easy, though perhaps less difficult than Denver. The ground is parched even though the summer mist may hide the sun, and the trade winds will wither any bloom that lies unprotected in their path. But the winter is open, and mostly free from killing frost.

The real gardens of San Francisco are hidden. True, you may see many small front yards where flowers and shrubs cascade on to the sidewalk. But the real gardens are mostly at the back of the houses, hedged, or walled or screened for privacy as well as wind protection.

I had no idea, when I knocked at a door on Broderick Street that, when I entered, I should walk straight from the dining room with its wide open doors into a garden that might have been some flourishing conservatory, it was so full of flowers. But instead of glass there was open sky. A small square of garden, just 27 feet square, as is the statutory size of many lots adjoining the older houses. I stepped on to the narrow concrete paving and then over the small brick wall on to grass. On the one hand was a border where rhododendrons flowered, succeeding the wisteria trained against the house trellis. The top of the border was entirely dominated by a superb double-flowering ornamental Japanese cherry that was a mass of pale shell pink bloom—so it had been, according to its yearly custom, the last five weeks.

The north border, facing the house, was planted with ferns and shade loving perennials and shrubs, and the

easterly border opposite the rhododendrons was full of camellias and fuschias, and these last would bloom in succession throughout the summer months.

But the whole character of the garden, or I might say its genius, lay I thought in the use of the low brick walls. A small wall planted with ferns buttressed the flagged path adjoining this westerly border. It was a patchwork carpet of small pools of color; mauve violas, primula and polyanthus, creeping thymes, yellow allysum and English daisies. I cannot call them bachelor buttons, as I would in England, since that is the name you give to the blue cornflower.

A white azalea, Snowdrift, was a compact drift of white bloom at the

end corner of the path, and set the seal to this miniature garden. Year after year it flowers there from January through to May, Mrs. Frank Rhem told me, and added "But I wish you could have seen the white Arras tulips. They are just over, but I think they are the most beautiful things I have ever grown."

But I had no regret. On that May day there was enough—and more. It was one of the most beautifully planned and planted small city gardens I have ever seen, and cared for entirely by its owner.

* * * *

The above story is by Joan Parry the girl from England who helped us here at Horticulture House for a few weeks last year. She is doing what



many of us would like to do if we had nerve enough—she is just a Happy Horticultural Vagabond, travelling where she wills and picking up valuable information about American gardens and plants. We hope that she will write a book about American Gardens when (or if) she ever stops travelling and settles down to write again. She wrote several nice stories while in Denver which we have used in the Green Thumb occasionally. We hope that she writes more about good gardens and good gardeners over this country of ours. A few paragraphs from her recent letter should be of interest to those who met her here.

"Since I wrote you last I have left San Francisco with regret, for as cities go it is beautiful, and over and over again I link it and its people with Denver.

"I took three days to travel up the coast highway, in perfect clear weather. I slept the first night in a tiny cabin at the foot of one of the towering redwoods, and the second way up on the Oregon coast after going through acres of azalea and rhododendron in bloom. And so to Portland where I had a wonderful and extraordinary experience. Totally unexpected the Portland Rose Society made me their guest for my two weeks stay there, with the result that I saw the rose parade from almost every angle. After thinking, dreaming, seeing and almost eating roses, and going to all the ceremonies as well as seeing a mass of gardens and gardeners, particularly the iris and primula and rhododendron people, I came quite exhausted to Seattle.

"It may have been the aftermath of much enjoyment from January and San Francisco onwards, but I am not as appreciative of Seattle as I should be. I am doing some really beastly office job until the end of this month and writing for all I am worth in the

evenings—when I can. It's hot: a bright brittle ninety-three at only 15 feet above sea level. I like Seattle best when I leave it for the mountains; it has grand panoramic views but it sprawls almost like Los Angeles, and it takes a long while to transverse its nine hills and vast expanses of water. Wages are low, living high.

"But I MUST spend a day or two in the flower fields on Mount Rainier; a day or two in the Olympics, and I want to see the sagebrush country and toast a piece of bread at the end of a stick of sage brush and then a slice of bacon and let the taste of sagebrush mingle with bacon fat as it drops on to the bread. And then I shall try to leap up to Lake Louise when I finally set off eastward middle of next month—to a farm in the Middle West near Sioux City, friends in Chicago, reach friends at the fall coloring in New Hampshire, and then Boston and New York. I shan't go home until next summer, if there is no war, and plan somehow to sit on a bus right across the continent, and spend the winter in Carmel working part-time and for the rest, writing up my travel. As I believe in miracles maybe it will work out that way.

"I have had one glorious day with the Mountaineers on Sun Top to the northeast of Rainier. Avalanche lilies, anenomes springing up at the edge of retreating snowbanks, and a host of other lovelies. I am due to do a weekend camping with the Rock Garden people mid July and another Mountaineer outing later. But it will be the last free two weeks that I hope to revel in, and be fancy free and footloose again in the high places."

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"PIONEER AMERICAN GARDENING"

"Pioneer American Gardening," a collection of stories of America's horticultural history from forty-one states, whose federated gardeners constitute the National Council of State Garden Clubs, has been compiled by Elvenia Slosson, President, 1949-51, and is published by Coward-McCann, Inc., of New York. This book is just recently off the press.

The subject dealt with in each story is its author's choice as being a glimpse of his or her State's share in creating the National Garden of the United States, and developing the country's horticultural wealth and beauty. The stories in "Pioneer American Gardening" are presented under seven headings: New England, Central Atlantic, South Atlantic, Central, South Central, Rocky Mountain and Pacific Coast. The States of Delaware, Idaho, Minnesota, New Mexico, Nevada, North Dakota and Wyoming, are not included; presumably they have no Federated Garden Clubs.

The Rocky Mountain Region consists of Colorado, Kansas, Montana, Nebraska, South Dakota and Utah,

and to Mrs. Beth Mattocks of Boulder has been given the honor of writing the story of "Gardening Pioneers of Colorado." She tells of our State flower and tree; of the old cottonwoods; of the planting of walnut, maple and locust trees; also fruit trees and grape vines; melons and berries by the men, and the making of home gardens with plants and slips, by the pioneer women. She also tells of the origin of Cherry Pie, Pumpkin Pie, Melon and Tomato Days.

The names of pioneer gardeners and botanists in Colorado in Mrs. Mattock's story are familiar to many of us—some we have had the privilege of knowing—and for that reason alone the book would be enjoyable. No doubt those of us who have adopted Colorado as our home would also enjoy comparing Colorado's contributions to "Pioneer American Gardening" with the accomplishments of our native State.

My own opinion is that while the book makes interesting enough reading, it actually adds nothing to horticultural history. It is slightly repetitious in those mentioned in some of the sections of the country where the work of the early botanists was carried on in states which adjoin others of a different section as classified in this book.

MERTENSIA AND FORSYTHIA

It often becomes a question where to plant the Virginia bluebell, so that the bare ground it leaves after disappearance is not unsightly. I have grown it under large bushes of Forsythia; both bloom together and the pinky buds and open bluebells of the Mertensia make an attractive picture when seen through the mass of golden bells of the Forsythia. After flowering, the shrub hides the disappearing Mertensia with its heavy sheets of foliage.

H. F.

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BACK-PACK TRIP INTO THE BEAUTIFUL SNOWMASS-MAROON COUNTRY, JULY 14 TO 22

By ANNA TIMM

SO THE schedule for July, carried in *The Green Thumb* read, "Packs taken by horses to camp—hikers on foot." To those who had been to Snowmass, as well as those who had only heard of its lure, this bait was irresistible!

After months of planning and many disappointments, Sunday morning found an eager party, three "cute little mules" and two wranglers winding their way up the trail that takes off at the upper end of Maroon Lake, past Crater Lake at the foot of Pyramid Peak, and grows steadily steeper until it mounts Buckskin Pass. Then it plunges down and down until it ends quite sharply at Snowmass Lake Camp Ground. And there it is! If by now, after a ten mile hike up and down, there is any breath left in the body, it is expended in one unbelieving gasp as the eyes take in this picture! One just cannot believe anything so beautiful and untamed, so wild and yet so serene and gentle, can be real!

We approached in a brisk downpour, but by the time the evening meal was over, a pale moon was shining on the Peak and stars twinkled through the very tall timber. We looked back regretfully as we climbed past Pyramid and Maroon Bells. They were so beautiful with the long, deep snowbanks streaming far down into the timber. But we never really left snow! Huge banks of it smothered the zig-zag trail to Buckskin Pass and finally topped the pass in a huge cornice.

Only a pack mule could have found a way over, dodging the deep cave-in

snow and daintily picking a path over the rocks and along shelf-edged cliffs. So the knapsack-foot travelers followed the mules and everybody got there!

We spent three days on Snowmass Lake in camp on the banks of crystal clear Snowmass Creek saying good-night and good-morning to the huge trout who, by the way, ignored us completely, not even bothering to hide when we stood and stared at them.

Then we decided to hike to Geneva Lake over Trailriders Pass. We found more snow all over the trail and took pictures and more pictures of Snowmass Lake, Snowmass and Hagerman Peaks, coming down in time to pack up again and head down the trail to Snowmass Falls Ranch and back to Maroon Bells where the cars had been left.

Then up Castle Creek and camp was made in an aspen grove above Ashcroft. We quickly set up camp; by now we had learned to erect the tents when the sun was shining. Thursday, Friday, and Saturday found eager takers for a hike to Taylor Pass and Park, Cathedral Lake and Electric Pass. There was more snow there; the trail completely covered at the top.

After leaving the Maroon Bells, the flowers began to disappear more or less. On Buckskin Pass, at the edge of the snow, we found Phlox, Forget-me-nots, Grass of Parnassus, and vividly colored paint brushes. But on the road or trail to Taylor Pass and Park everything in the book seemed strewn everywhere, helter-skelter, in



an eager haste to completely cover every inch of the rugged terrain. Even the dainty, exclusive Mariposa lily floated among the rugged paint brushes and flowering shrubs. There will be pictures later for you unbelievers. The same things were found in the basin at Cathedral Peak, where the trail takes off to Electric Pass.

Those of us who were fortunate

enough to be able to partake of this feast have a feeling of deep gratitude to the members of Colorado Forestry and Horticulture Association for making it possible to put over a trip of this kind. While being aware of the many much more important things that are being carried on at Horticulture House, we still want to say, "Thank you, C. F. H. A."

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DEATH IN THE LAWN!

By LESLIE F. PAULL

MRS. HUGH McLEAN of Denver recently phoned to ask me to identify some mushrooms she had collected on her place. When she came she brought several pounds of a very suspicious looking species. After examining them I felt reasonably certain that the genus was *Amanita* and this was later confirmed when I had the opportunity to take a spore print.

While some species of *Amanita* are not poisonous the great majority of cases of fatal poisoning can be attributed to one of three species of the genus, and the amateur had better let them all alone.



Recent weather conditions—rain, high temperatures and high humidity—have been most favorable for the appearance of various mushrooms. The menace to life is manifest when it is possible to collect such a quantity from one small area (*if it should prove to be a poisonous Amanita*). The danger is especially great to untrained amateurs and to children. Any mushrooms found that are similar to these described should be destroyed, especially if children are around.

Further study of this particular lot of mushrooms make it highly presumptive that they were the very poisonous Fly Mushroom (*Amanita muscaria*). A good physician would know the only antidote, *provided the cause were known and he were notified in time*.

If you like to collect your own and find in your lawn some nearly pure white, fleshy and luscious-appearing specimens, close your eyes, take a complete about-face and get away before you are tempted.

If you are certain you can resist, and want to examine the evidence, here it is. The cap, in this case white, but usually yellowish, is more or less studded with small scales. It is very fleshy and nearly spherical, and reaches the size of a golf ball. It is set on a stem, which is narrow at the top and increases in diameter toward the ground where it ends in an enlarged, rough knot. Sliced perpendicularly, the gills are seen to be white. The cap is separated from the stem by a broad ring of thin tissue. If you know how to make a spore print, the white spores will furnish final confirmation.

Now go wash your hands twice before handling food. Mere contact can induce severe nausea.

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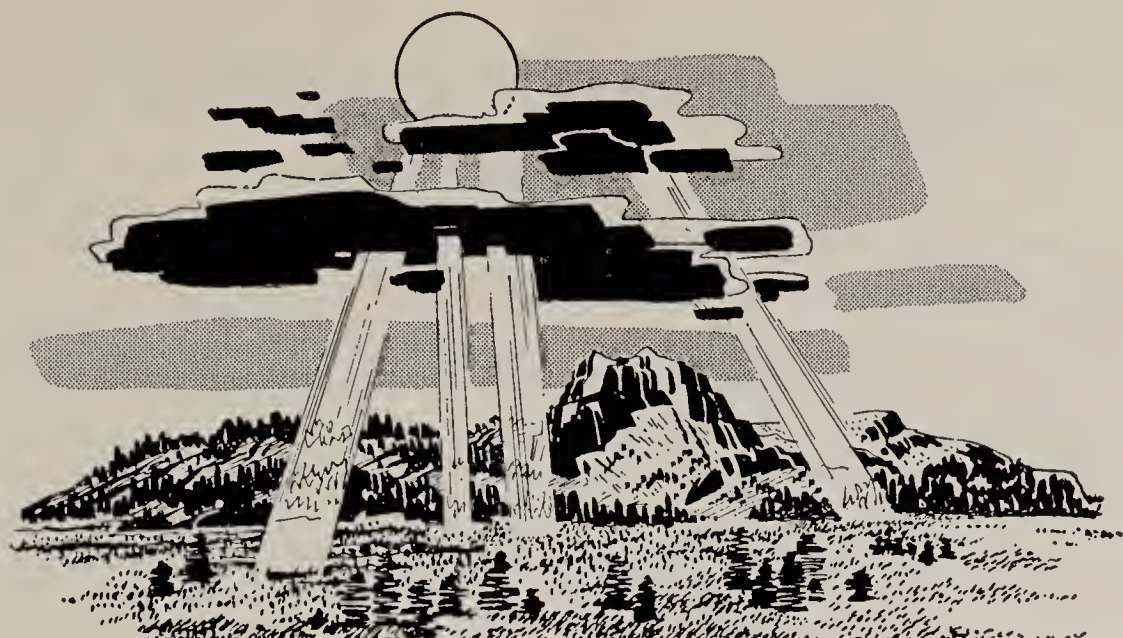
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BIRDS IN OUR GARDEN

By RUTH ASHTON NELSON

ANY time of year is a good time for bird lovers. But I find late summer bird watching especially easy and rewarding. Now the strain of rearing the nestlings has been relaxed. The young birds are able to feed and fend for themselves, but many species travel about in small family flocks feeding sociably and, in the main, good-naturedly. At this time they seem more tame because the acute caution with regard to the nest in the face of suspected danger is gone, so is the urge to sing. Parents, in feeding and protecting themselves, are setting unconscious examples. They are also refreshing themselves leisurely after the tense period of courting, nesting, egg-laying, incubating and feeding their offspring. It seems logical to think that migratory birds require this period of recuperation before setting out on their long southward flights. At any rate during late July and August the little groups of one or more families are to be seen about the garden, along the roadsides and in our parks and mountains.

At the mountain cabin recently my attention was attracted by the "yank, yank" call of a slender-billed nuthatch with two youngsters, searching the rustic posts of our porch. As I watched these strikingly marked white, black and gray visitors in their characteristic ups and downs I heard the buzzing notes of the wren family, busy in the shrubbery close by. Then a flash of white tail feathers caught my eye and I discovered the brown-backed grey-headed juncos feeding on the ground. Their young ones were somewhat streaked and less trim looking than the adults and were still coaxing for food from their parents, though quite capable of finding it for

themselves, as they did when left on their own.

Here, around the garden, we have several kinds of finches and their relatives. Almost any time we look out we see them busily picking up ground insects and weed seeds among the shrubbery. Families of chipping sparrows have been very friendly, their small size is usually enough to distinguish them from the other sparrows. The adults are easily recognized by their bright rufous-brown caps and clear gray breasts, but the young have both caps and breasts streaked. The little pine siskins, sometimes called "dandelion birds" from their habit of perching on a dandelion head to eat the ripening seeds, are also here as are the tuneful house finches. But our greatest thrill has come from watching a gay lazuli bunting whose nest was in the willows across the road. His turquoise blue coat and reddish breast suggest a piece of Zuni Indian jewelry. His favorite perch is a dead snag but sometimes we've seen him on the lawn where his brilliant colors show off to good advantage. During the nesting season his bright, short song could be heard almost continuously from daylight to mid-morning and frequently later in the day. Late in July I timed him one morning and found he repeated his little phrase nineteen times in one minute. A day or so later I heard him only occasionally with but few repetitions each time, and now his voice comes infrequently, in a single phrase. The singing of most of our birds breaks off abruptly as the nesting season ends.

The young lazulis are streaked and sparrow-like in appearance and even the adult females have only a tinge of blue but the young male birds will

come back in gay coats next spring. These fascinating summer residents have a tendency, as do many of our migratory birds, to return at nesting time to the same locality in successive seasons, so I shall be listening and watching eagerly next spring for the repetitious song and the turquoise plumage of this little bunting.

As soon as our new lawn came up we began to see a young rabbit feeding busily on the white clover leaves. Since early June there has been a series of bunnies fattening on this pasture. We've enjoyed watching the little fellows and they have become very tame. But I had some misgivings, fearing they might desert the clover for the lettuce or chard in our small salad garden. But so far the young clover appears to have more appeal than anything else. Perhaps where rabbits are a problem to tender-hearted gardeners it may pay off to plant a patch of clover for them.

SHABBY AFTER BLOOMING

Some perennials, such as the bleeding heart and the oriental poppy, have ragged foliage after blooming so should have some tall, bushy plant placed in front and around them to hide their seedy looks. See if you can't think of some plant which may be good for this purpose. H. F.

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SEPTEMBER GARDENING

The nights should be cooler this month and the need for heavy watering lessened. It is time to begin to ripen up woody plants so that they will stand the winter better. Much of the "winter kill" that happened last winter was actually a kill because of the freezing of growing plants in November. Plants that are matured and hardened up will not be so easily damaged.

AFTER woody plants are completely dormant (have dropped their leaves) the ground around them should be thoroughly soaked so that they will freeze-up wet. If freezing weather is delayed for several weeks, another soaking should be given.

When the first hard frost hits the Gladiolus, Cannas, Dahlias and Tuberous Begonias they should be dug and stored. Glads should be dried and cleaned, Cannas stored in a cool place leaving some soil on them, Dahlias and Tuberous Begonias carefully packed where the temperature and moisture can be regulated.

Perennials that have become dormant can be moved now if necessary. Peonies, Bleeding Hearts and such must be moved in fall, if they have to be moved. Woody plants should be left until they are completely dormant.

Now is the best time to seed lawns. There is enough sun in the daytime and it is cool enough at night so that there is good growth of grass without the constant care that there is in summer. Weeds that do start are soon killed by the early frosts. Be sure to thoroughly prepare the soil before seeding. A great majority of lawn troubles are traceable to planting in bad soil which would not allow deep root growth.

Clean up the withered flower stalks, broken limbs and other rubbish around the garden. Give the hedges a last shearing.

September is the month when the kids go back to school. Get the habit and lay out a course of study for yourself. Bugs, fertilizers, insecticides, propagation or a hundred other subjects are worth learning more about.

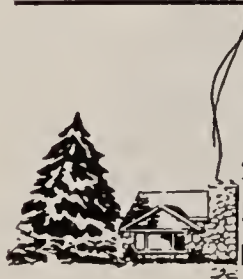
Enjoy your garden now—use the seats that you have arranged around the garden and never had time to sit in. Look and Learn should be your motto this month. Visit your neighbors' gardens and stop wherever you see something that looks interesting. All good gardeners like to pass on to others their garden "secrets."

Trimming of trees can be done as necessary. Proper care may prevent much storm damage to them. Look for the fall invasion of aphids on Dogwood, Euonymus and Snowball. They can be killed at this stage while it is difficult to hit them when they curl the leaves in spring.

Rose shown on opposite page is of the variety Mme. Joseph Perraud, from the Henry J. Conrad garden.

Back cover shows the native Mariposa lily.

All color photos are Ektachromes by George W. Kelly.



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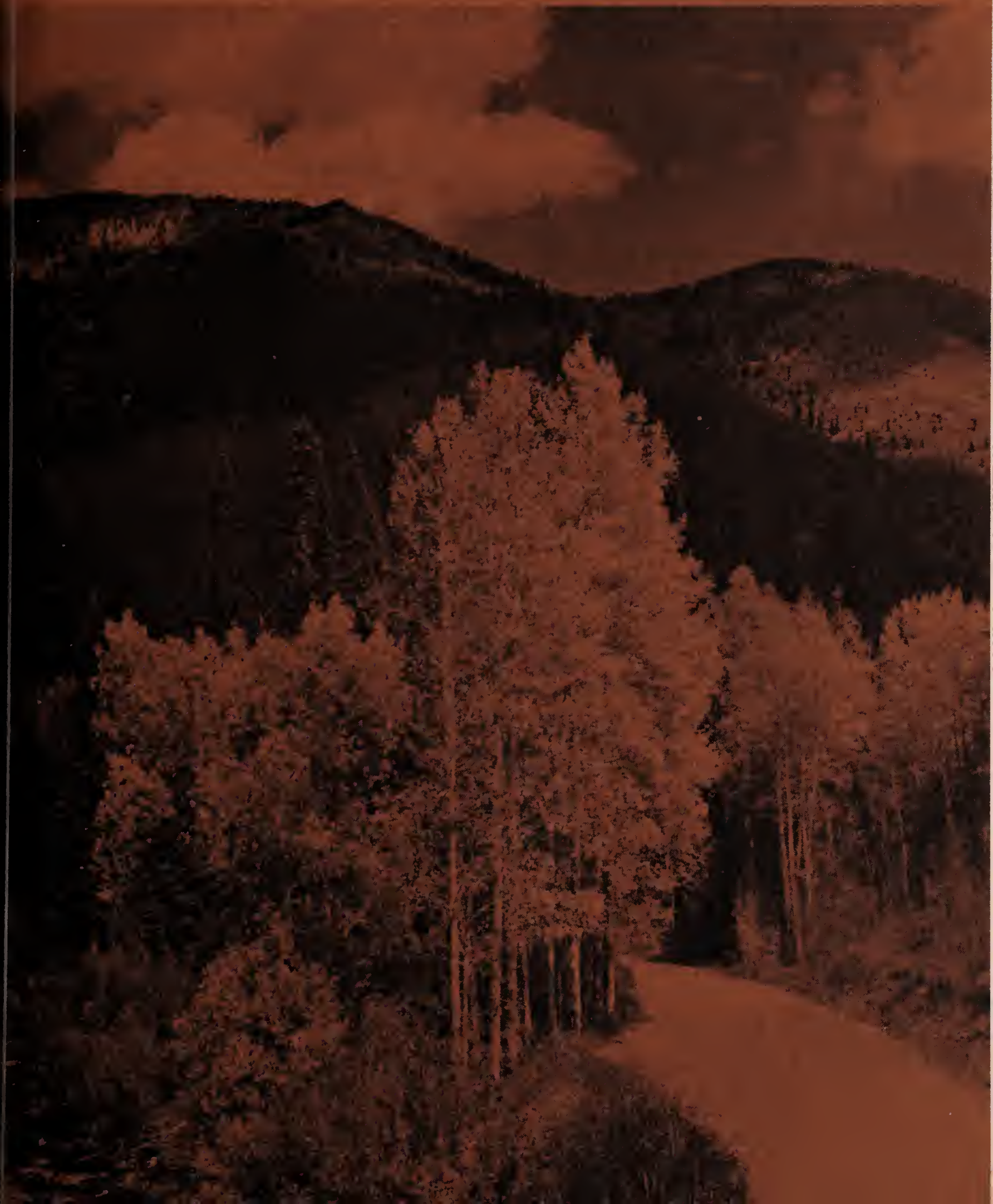


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The Green Thumb

Vol. 8

OCTOBER, 1951

No. 10

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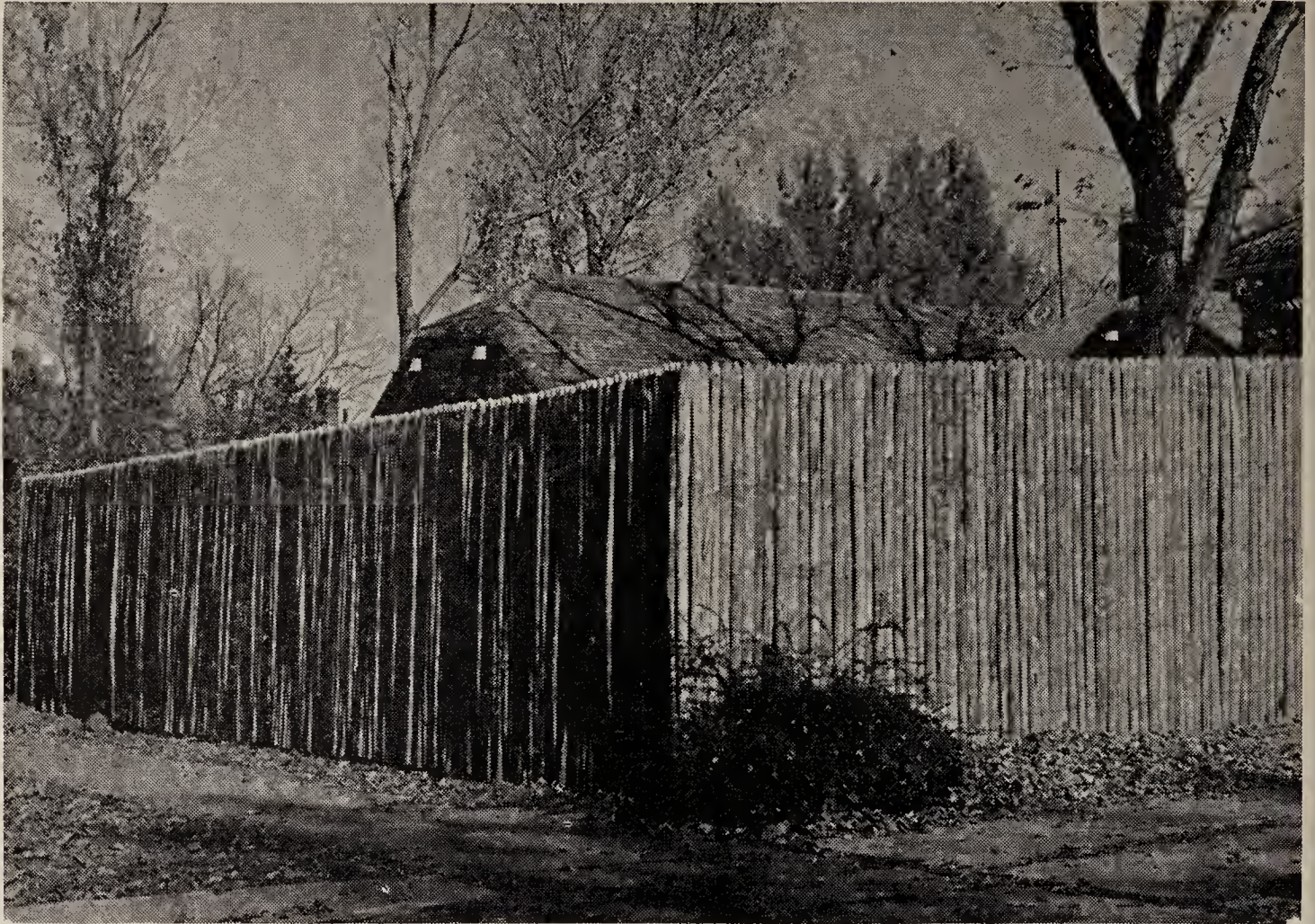
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OCTOBER SCHEDULE

- Oct. 4, Thurs., 7:45 P. M., at Horticulture House. Preparing the Garden for Winter, by Scott Wilmore.
- October. 7, Sun., leave Horticulture House, 8 A. M. Fall color on Squaw Pass.
- Oct. 11, Thurs., 8 P. M. Denver Rose Society at Horticulture House.
- Oct. 13, Sat. The well-known Annual Plant Auction will be held as usual in the Greek Theatre of the Civic Center at 1:00 P. M. This will be a good chance to get garden material and supplies for fall use at bargain prices.
- Oct. 18, Thurs., 7:45, at Horticulture House. Program on Wild Life.
- Oct. 21, Sun. Leave Horticulture House, 8 A. M., to see the fall effects near Jones Pass.

ANNUAL PLANT AUCTION

The Association's annual plant auction will be held this year on October 6th at the Civic Center, from 1 p.m. to dark.

This is the third year that the plant auction has been held and indications are now that it will be the biggest and best.

Those who have attended before have been able to get some fine trees, shrubs and flowers at low prices.

All material is donated by nurseries and private gardeners so all receipts are net for the use of the promotion of the work of the Association. If sufficient funds can be raised by these auctions it may be possible to avoid raising the membership dues. At present these annual dues only cover about half the expenses of publishing the Green Thumb and carrying out the other work of the Association.

Send a nice plant or two that you can spare and come buy some things that you need.

On October 4, Mr. Scott Wilmore of the W. W. Wilmore Nurseries will be on hand to tell all the "green-thumbers" about putting their woody plants and perennials to bed for winter. This promises to be a very interesting and instructional meeting.

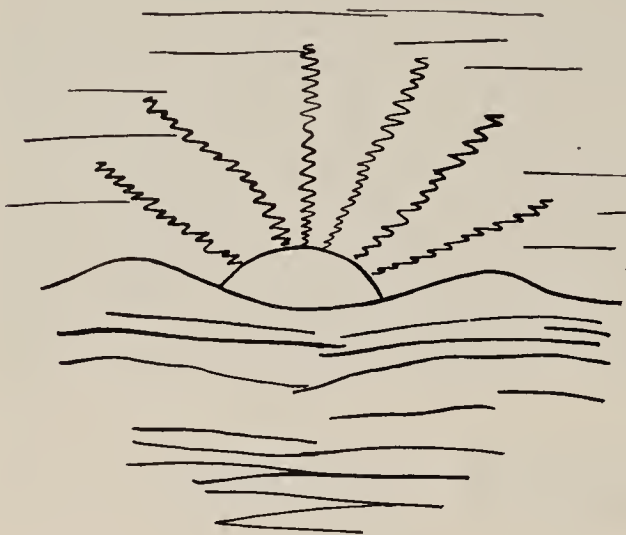
Horticulture House will be open at 7:30 p.m. and the lecture will begin promptly at 8:00 p.m. If you have problems or questions to ask about preparing your garden for winter, bring them to Mr. Wilmore at Horticulture House the first Thursday evening in October.

**Come to the Plant Auction, Civic Center,
Saturday, Oct. 13th**

WHAT SHALL I PLANT IN FALL?

GEORGE KELLY

THERE are annual arguments among gardeners in this area as to the advisability of fall planting. Some years most of the things moved in fall go through the winter in good shape, while other years there may be a complete loss of certain classes of plants such as evergreens and roses. Let us see what the conditions are that limit fall planting.

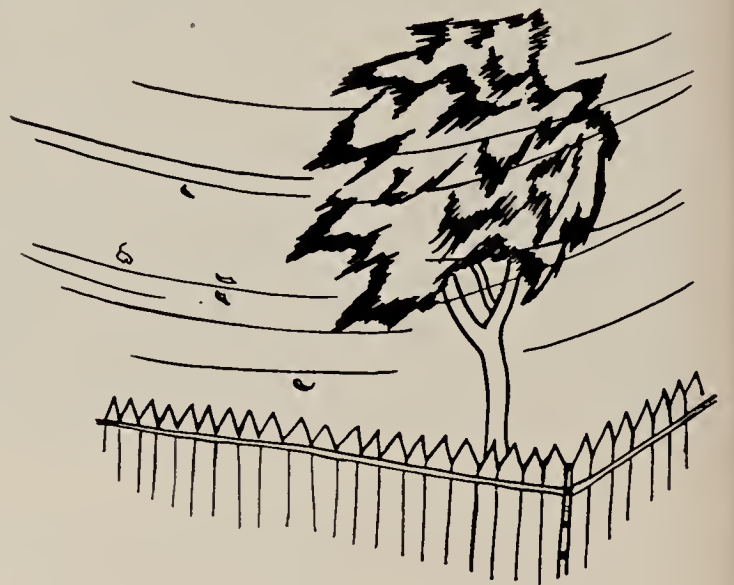


HOT SUN. We frequently have many weeks of warm, open weather in the fall. During this time the hot sun is drawing moisture out of newly transplanted plants and their restricted root systems can not replace it fast enough, so, the tissues of the plant dry up.



DRY AIR. Low humidity goes along with these hot open days and acts like a blotter to absorb moisture from plants.

LACK OF RAIN OR SNOW. This often leaves the subsoil with little or no moisture to replace that taken up in the air.



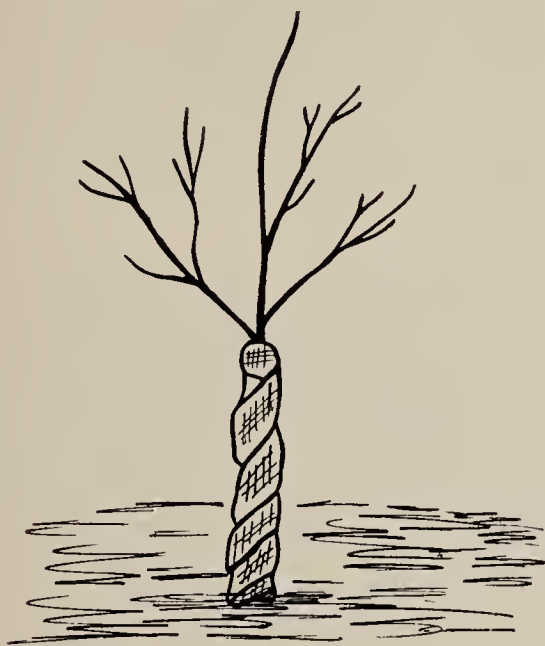
WIND. When plants have had their roots restricted by transplanting and the top not cut back sufficiently the wind over winter may whip the tops around and loosen the roots so that air enters the soil around them and completes the drying up process.

ERRATIC WEATHER. Because of the mountains close by and our high altitude the weather often does not continue long in one way, but we may have weeks of fall weather in winter and winter weather in spring. These periods may alternate frequently and at the wrong times to make plants happy.

What then can we do to in some way alleviate these difficulties?

LATE WATERING. After all chance of new growth has passed and the plants are entirely dormant the

soil around their roots should be **THOROUGHLY** soaked. The depth that it is necessary to soak the soil depends on the plant concerned. Trees might require moist soil 6 feet or more deep while a lawn might survive with 6 inches of watering. The only way to tell when the water has soaked down sufficiently is to dig in occasionally and see. If open, dry weather continues for several weeks after this late fall watering, another watering should be given. If the soil around plants is dry it should be watered whatever month of the year it is.



SHADING. Some tender-barked plants like Mountainash or Linden should be shaded by lath or burlap to keep from winter burning. Many evergreens would be benefitted by



a little shade for they do not drop their leaves in fall and so lose more moisture from them.

BRACING. Carefully bracing tall shade trees will often eliminate much winter damage.

MULCHING. Covering the surface of the soil with suitable material may help to hold the moisture in the soil, may help to regulate the temperature of the soil and avoid some winter damage.

Some plants move *better* in fall than spring. Such early growing things as Peonies, Bleeding Hearts, and Rhubarb should be moved in fall after they are dormant. Oriental Poppies are best when moved in August. Many of the common perennials may be moved in fall if taken care of properly, but almost any of them are better for moving in spring. Lilacs seem to like fall planting as well or better than spring. Quick-growing things like Chinese Elm, Honeysuckle, Spireas and such usually move well in fall if properly taken care of.

Many of the evergreens, especially the low Junipers, are usually risky to move in fall. Roses are a gamble unless they are handled just right. Almost all the things in the Prunus class are likely to burn or die in unfavorable seasons. Slow growing trees such as the hard Maples, Oaks and Linden usually do better when moved in spring soon before they break into new growth. This is especially true of Birch, which should only be moved during the week in May when the buds break.

The main reason for planting in fall at all in this country is to relieve somewhat the annual spring planting rush. Some gardeners and nurserymen are willing to take the gamble of moving things in fall so that they will have less to move in spring. Sometimes it pays but sometimes too many things do not survive.



Give us YOUR favorite combinations so that we may pass them on to other good gardeners.

In my estimation two flowers that should be planted together is the perennial aster Frikarti, Wonder of Staffa, which is a lovely blue with yellow center and annual aster Chinenis.

Aster Frikarti is lavender-blue and the blossoms are 2 to 2½ inches across. It blooms from June until frost and does well in light shade but comes to its full perfection in full sun. It is excellent for cutting.

The Annual Chinenis aster is a lovely single pink (comes in other shades), but the pink one is the color I would choose to go with the Aster Frikarti. This aster is 2½ inches or more across and has yellow center. It is more wilt resistant than some of the other annual asters.

ELIZABETH BAHM.

Martin Keul likes a narrow bed bordered with Phlox drummondii and the center filled in with verbenas. He also likes to add utility to his garden along with the beauty with rows of carrots and beets alternating.

Probably the most popular summer perennial combination is a planting of madonna lilies in front of clear blue delphinium with an accent of some red flora-bunda rose such as Worlds-fair or Donald Prier. It is also a patriotic combination for the Fourth of July.

The hot, intense color of the reddish orange Umbellatum Lily which fights with so many garden flowers is cooled down and made very pleasing when planted in front of the cool gray leaves of a Russian olive hedge.

A lovely spring combination is the Divaricata Phlox planted in front or under common lavender lilacs and accented with clumps of pink tulips.

Another combination that I observed once in the Phipps garden, when it was new, was common Heliotrope growing through the branches of Pfister Juniper. I mean the Heliotropium peruvianum with the sweet scented violet colored blossoms. It is an annual I think or has to be treated as such here in Colorado.

MYRTLE DAVIS.

A mass of bright pink tulips, such as Clara Butt, is very effective planted in front of any of the purple leaf plums.

A delightful and dependable effect in the late border may be had by planting Aster Blue Gem in back of a combined border of Petunia Salmon Pink and the gray foliage of Veronica incana whose flower stalks have been trimmed away.

VIRGINIA HAFFNER.

My favorite flower is the wild rose and this spring I saw such beautiful ones along the road sides that could easily be adapted to our gardens, growing with yucca plants in full bloom. There was also the lovely blue of mertensia and blue pentstemons. I'm going to plant some of the wild roses and pentstemons on my rock wall and see if they won't all grow happily together. I have the yucca now with tiny iris, grape hyacinths, daffodils, and different sedums. This is a lovely early spring combination.

SUE JOHNSON.

Lonicera korolkowi. Blueleaf Honeysuckle. as a backdrop for Iris Spindrift or (not and) Irish Blue Shimmer.

Monarda Cambridge Scarlet with Phlox Thor or Phlox Jules Sandeau.

Helenium moerhemi in front of Helenium Riverton Beauty.

Lilium regale with white Delphinium (good white, no skim milk stuff).

Mertensia virginica with Tulip Picotee or (not and) Tulip Clara Butt.

Plant in self groups or drifts, no spotty intermingling or 'dot-and-carry-one.. business.

KATHLEEN MARRIAGE.

FROM HELEN FOWLER'S NOTEBOOK

Trollius ledebori, which a few years ago, obtained the Royal Horticultural Society award of merit, grows about three feet high, produces immense quantities of large, open flowers of a rich orange-gold and has protruding anthers of a heavier orange color, giving a light and graceful but substantial effect. The stems branch freely, which make fine cut flowers. The seeds germinate freely and yield plants quite true to type. Given good culture, an abundance of flowers can be cut and a second cut may be looked for in the autumn.

Aconitum napellus, the English monkshood of old gardens, is the first of this family to flower and may be used to succeed the early Delphiniums in the hardy border.

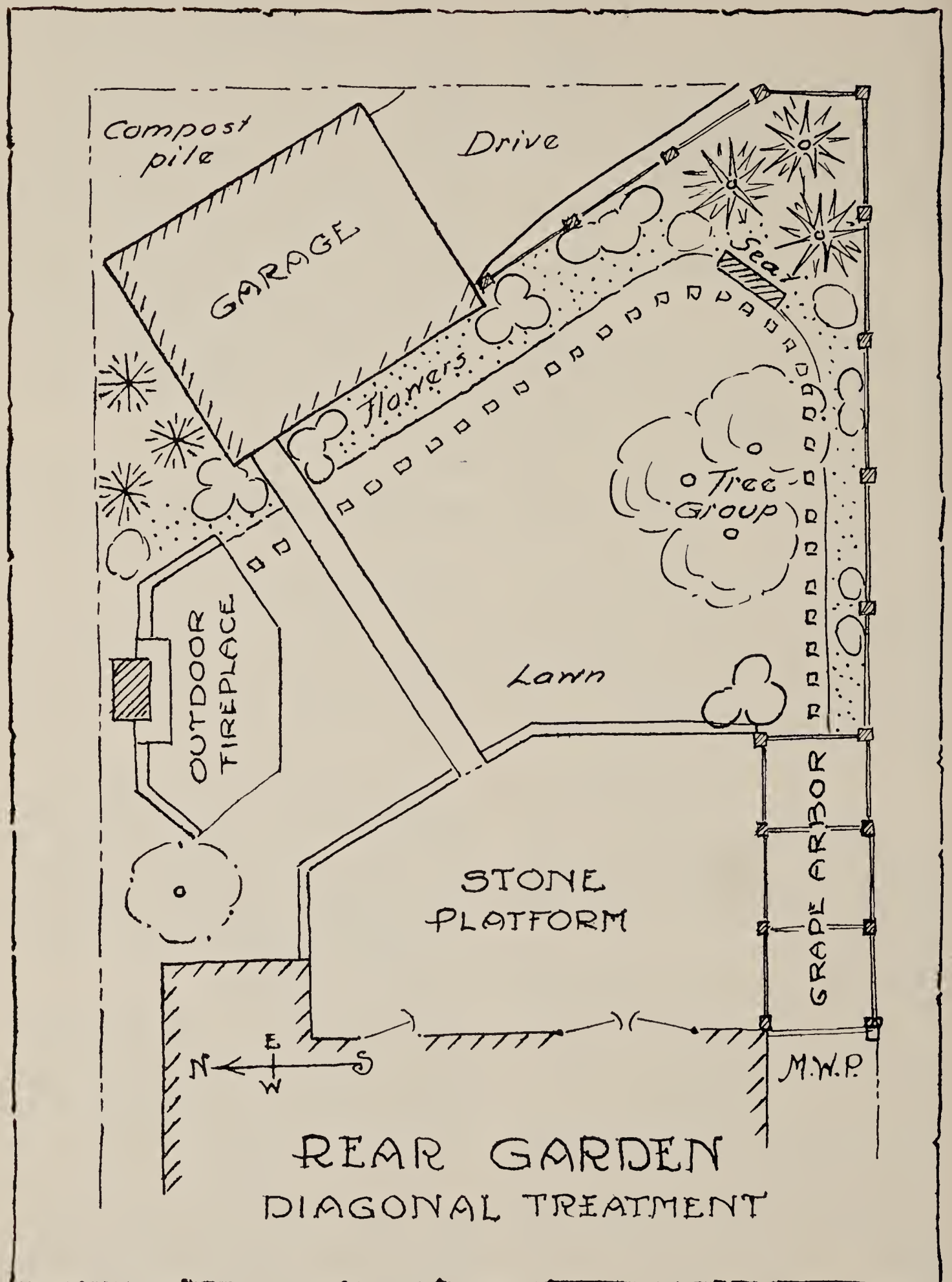
Do you like bright scarlet in the garden? Lychnis chalcedonica is an old English plant now mostly found in rural cottage gardens.

I do not see much of Platycodon grandiflorum as I go about gardens. It is one of the hardy plants for a general border. Upright and sturdy, neat in habit, it has flowers similar to a clematis and about as large. Eighteen inches in height.

A good plant for waterside planting as well as for the hardy border is Lythrum salicaria. It grows up to 4 feet in good soil, forming a big bush of intense rosy-purple.

Rose bushes. Continue vigil until you cover plants for winter. Rose slugs are long since gone but continue dusting or spraying for black-spot and mildew; pick up all fallen rose foliage and keep ground thoroughly cultivated.

H. F.



AFRAID OF A DIAGONAL?

By M. WALTER PESMAN

MOST of us are so used to the stereotyped rear garden that we shudder involuntarily when faced with a diagonal line that cuts boldly through our neat rectangular pattern.

What to do? Screen it out apologetically or design "over it," pretending it is not there?

The modern attitude is to accept a logical placement of utilitarian features and to make them a definite part of the design. A diagonal, according to that attitude, can be the basis of a novel treatment, forceful and striking, for the very reason that it is straight-forward.

Here is one illustration of rear area treatment resulting from the very logical "askew" placing of the garage.

The following shows how the plan grows naturally out of a step-by-step development.

A direct walk connecting garage door with the main rear entrance of the house divides the area in two irregular units. This in turn invites a sitting area (stone platform) of unusual shape at the rear of the house. It has morning sun and afternoon shade. A very logical adjunct to it is a small grape-arbor to the south, screening it from the neighbor's yard and providing pleasant shade in the heat of the day.

The north area, being close to the kitchen, lends itself ideally to an outdoor fireplace, nestling against an evergreen planting back of the garage.

Doesn't that suggest an informal balance by a group of evergreen trees in the southeast corner? And again, doesn't that almost call for a seat placed under their protection?

The group of deciduous trees shown half way between seat and platform furnishes a bit of semi-seclu-

sion by arresting one's attention. For added privacy the pergola posts can be repeated at intervals along the east and south fence.

The rest is elaboration: suit your own taste!

IT'S STILL TRUE, 148 YEARS LATER

Extract from a book entitled "A Treatise on the Culture and Management of Fruit Trees," by Wm. Forsyth, published in England in 1803. Book presented to the Helen Fowler Library by John T. Roberts.

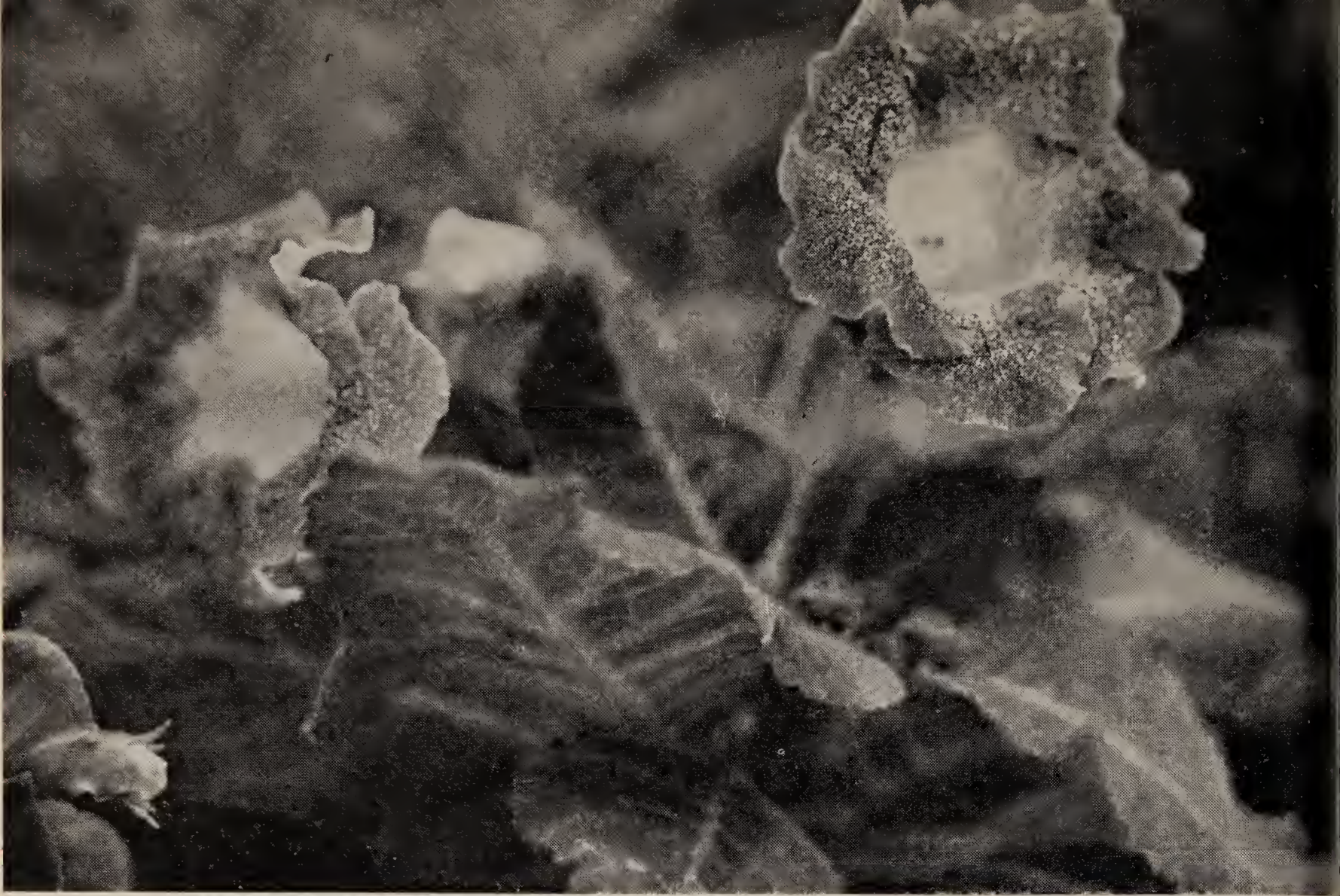
"It is much to be regretted, that fruit trees in general throughout this kingdom are in a mutilated and unfruitful state. After gentlemen have purchased the young trees from nurseries, and planted them in their orchards and gardens, they think that everything necessary is done; when in fact, the greater part of the work is yet to come. * * * It is common, when young trees do not thrive, either to blame the nurserymen for sending bad or diseased trees, or to attribute their unthriving state to the nature of the soil; whereas the fact is, that this frequently arises from the inattention or mismanagement of the person who plants and superintends them."

BETTER STREET TREES

The woes that have befallen the street tree situation in this country can be attributed directly to three basic mistakes—(1) overplanting or crowding; (2) out of scale planting, trees too large for the ground or aerial space available, and (3) insufficient maintenance.

EDWARD H. SCANLON,

Commissioner of Shade Trees,
City of Cleveland, Ohio.



THEY NAMED IT SINNINGIA SPECIOSA!

By CLAIRE NORTON

EARLY in the Nineteenth Century a very handsome plant was brought out of Brazil. In 1817, Loddiges figured and named this plant in his Botanical Cabinet. And then it was discovered the plant had been mis-named and belonged instead to a related genus, with a prior name. It had a tuberous rhizome; therefore, the nomenclaturists hung the title *Sinningia speciosa* on it. But the horticulturist then and now continued to call the plant, as did Loddiges—*Gloxinia*. For this was the forerunner of one of today's most popular house plants.

More than a century was to pass before the popularity of *Gloxinia* took hold of the general gardening public. It was considered "difficult" and suited only to conservatory or greenhouse culture. But with a plant possessing such innate beauty and variety, the plant breeder could not resist the temptation to see what would happen next and the adven-

turous window gardener had to try the new developments out under the only conditions at his command—those of the house. At last *Sinningia speciosa*, known as *Gloxinia*, is coming into its own.

Gloxinias are no harder to grow than the related African Violet, *St. Paulia*. In fact, their general cultural requirements during the growing season are about the same. The very best spot in the house to grow either is an east window in the kitchen. Both have velvety leaves which readily burn in the direct sun, especially when coated with a film of water; both like a humid atmosphere. Both respond best to watering from below, with water at room temperature, followed by a thorough draining of the soil before returning to a jardiniere. Both prefer a gritty, humus-filled, well drained soil, and a pot which permits free drainage. Both resent drafts or sudden drops in temperature. But the *Gloxinia*, unlike the

African Violet, is started from tubers and requires a resting period after blooming. During this time, from three to six months, the tubers are stored in a warm, dry cellar or closet and water withheld.

There are several ways to get a start with Gloxinias. Blooming plants may be purchased from the florist, and make truly fine gift plants. Dormant tubers may be purchased during the winter or early spring and planted in a five- or six-inch drained pot of one-half good garden soil, one quarter granulated peat and leafmold and one-quarter sand. Additional crocking or coarse gravel in the bottom of the pot is recommended for still better drainage. During the early stages of growth, do not water too freely, gradually increasing moisture until full bloom is reached, then decreasing again until the leaves have withered. Summer is the Gloxinia's natural season of bloom, but by starting growth of the tubers at various seasons, flowering can be had at almost any desired time of year.

Like African Violets, Gloxinias can be started from leaves inserted in vermiculite, sand or sandy soil. Some window gardeners are successful in starting the leaves in water. The best time to make leaf cuttings is just after flowering ceases. Some leaf cuttings continue growth until they flower; others quickly form tubers and become dormant. These are handled just as are purchased tubers, bringing into growth when natural activity is resumed.

Gloxinias are also readily grown from seeds in a warm, moist atmosphere, such as provided by a Wardian case. A glass top mason jar, laid on its side, with the fine seeds scattered on a layer of moist peatmoss or screened leafmold, the jar closed without the rubber, can substitute for a Wardian case. So also can a rose

bowl or fish bowl with a glass over the opening. No water need be given with any of these and as soon as large enough to handle the new little plants can be transferred to a flat or individual small pots, shifting to larger pots as required.

No matter how you get your start with the Gloxinia, you can never find a showier plant. The large tubular flowers, borne upright singly or several on graceful stems above the mass of handsome foliage, have a velvety texture and richness of coloring not to be surpassed. The reds are vivid; the pinks, beautifully clear; the blues and purples and crimsons and whites, gorgeous beyond description. And then they may, just for additional variety, dot these colors on lighter grounds, or tint the edges, or deepen the color in their throats.

So why not try *Sinningia speciosa*—Gloxinia, to you?

EVERGREENS

Evergreens must be taken care of, particularly if the weather is dry, as they are easily winter-killed. Take nozzle off hose and allow water to run slowly for hours. Should frost get below the root level, no moisture can be drawn by the plants. Leaves and stems must contain enough moisture to keep them through the cold period.

H. F.

Mrs. Beverly Mango makes a very clever suggestion for soaking spots in the garden and not violating the ordinance against the use of an open hose. She fastens an old cotton work glove around the end of the hose with a rubber band and turns on the water a little. It spreads the water over a large area and does not wash. If you don't have an OLD glove a new one can be bought for a few cents.



INTRODUCING MRS. LONG-TAIL

By MARTHA L. MACBRAYER

SOME people declare that insects are our greatest rivals. Many would have us believe that in spite of all we can do, our insect enemies will bring about the end of civilization. Some even believe that the insects will at last crowd man off the earth altogether. Memories of the full scale "war" against them in the garden during the past few months have almost convinced some of us.

There are many different ways of defending ourselves and posterity against these ravaging enemies. All

the various methods fall into four major groups; mechanical means (traps and other devices); chemicals (stomach and contact poisons); quarantine (restricting shipment of plant materials and crops from infested areas); and biological control (finding natural enemies of pests). The last method is Nature's agency for preventing the undue increase of any species. If one does become very abundant, its natural enemies, finding plenty of food, increase also, and tend to reduce its numbers. Three prin-

cial groups of pest destroyers help us; the insect-eating birds, amphibians, and mammals; the predacious insects; and the parasitic insects.

A good example of how Nature's scheme works is to pry into the private life of Mrs. Long-tail pictured above. She is known more correctly as *Megarhyssa lunator* or the Long-tailed Ichneumon Wasp and belongs to the third group or parasitic insects. She measures about $1\frac{3}{4}$ inches without the "tail", which is actually an ovipositor or egg-layer, and about 5 or 6 inches over all. Her children have the same finicky appetites that she had as a youngster, namely, the larvae of the Pigeon Horntail, *Tremex columba*. In Colorado, this horntail bores into the dying branches or trunks of maples and elms and can do considerable damage. By means of her long, sharp ovipositor, Mrs. Long-tail lays an egg inside the body of an horntail larva and as soon as it hatches the young ichneumon finds itself surrounded by food and begins to eat and grow. At last the insect that is being eaten dies, but by this time the ichneumon larva is ready to leave and spin its own cocoon. While in the pupal stage it goes through the wonderful changes which make it over into its adult form. The ichneumon fly, in turn, is parasitized by an *Ibalia*, one of the gall-maker family, which probably is parasitized by something else—ad infinitum.

After completely ignoring and materially disrupting the balance of things, man at last is beginning to glance hesitantly about him and examine some of these natural controls for pests. The subject has economic possibilities as well as fascinating scientific problems. Remember how the little Ladybird Beetle saved the citrus trees in California? Little by little we are discovering that Nature's way may be the best way after all.

BULBS MAKE SPRING GLORIOUS

Set the stage now for your spring show. How deep should tulips be planted? Never less than 4 inches but better 10 or 12 inches. Planting them deep keeps bulbs from splitting into small bulbs after blooming and so will continue to produce for sometimes as much as 20 years. Dig out 9 inches of the soil or even a little more; loosen subsoil adding some old manure and some coarse bonemeal. Place bulbs 5 to 8 inches apart in the trench then cover with the soil first taken out.

Try the Scillas this year. Siberian Squill (*Scilla siberica*), *S. campanulata* (Wood Hyacinths), Spring-flowering Crocus, *Chionodox* (Glory-of-the-Snow), *Galanthus* (Snowdrops), and above all *Leucojum*—snowflakes—white, bell-shaped flowers tipped with green. There is no other bulb lovelier than snowflake. I shall buy myself another grape hyacinth this year—*Muscari armeniacum* (accent on the I, long sound). It gives perhaps a longer bloom than any spring bulb, bright blue in color—a real bobult blue. *Muscari armeniacum* with gold Daffodils above.

Too few are acquainted with the hardy *Amaryllis* (*A. Halli* or *Lycoris squamigera*). Handsome clusters of pink-lavender flowers which appear in August after foliage has disappeared.

H. F.

WATERING EVERGREENS: Winter losses of evergreen is often due to their becoming bone dry during this season. Since evergreens hold their foliage water is evaporated all during the winter. When they can't get moisture from the frozen ground they go through a great deal of suffering. Watch them, too, during the dry spells of winter.

H. F.



BOATING DOWN THE RIVER

By GEORGE W. KELLY

JULY 21 and 22 found seven adventurers floating down the Yampa and Green Rivers through the Dinosaur National Monument. These folks wanted to see for themselves what the canyons were like from the bottom and determine if such trips were safe and feasible for the general public.

The trip was taken in rubber life rafts manned by Bus Hatch and his son, Frank, from Vernal, Utah. Each boat held 5 people and equipment. The route started at the Mantle's ranch and ended at the camp ground below the Monument headquarters

near Jensen, Utah. The first night was spent at Pat's Hole at the junction of the Yampa and Green Rivers. Camp equipment for this night out was trucked into Pat's Hole.

The party included Art Carhart, writer; Joe Penfold of the Izaak Walton League, Don Peach of KOA, Don Bloch of the Forest Service, Mrs. Glenn Johnson, Mrs. Edward Weith and George W. Kelly.

Under the skillful guidance of the Hatches the ride was safely made, though extra precautions were made when going over the worst rapids. One spill was made near the end of

the trip when a boat hit a large rock. This seemed to add to the thrill of the adventure.

All on the party agreed that this was a wonderful trip, entirely possible and safe to be made by thousands of people. All agreed that the majestic canyons gone through were something really out of this world and that they should be saved at any cost for future generations to enjoy. This trip proved that from the water was the proper way to see these cliffs and canyons, and this method would in no way ever destroy their wildness.

During the trip many wild Canadian geese swam and flew ahead of the party, many deer were seen along the shore and there was evidence of other wild life in its primitive habitat.

Flooding this canyon, they all agreed, would spoil the chief attraction by eliminating the shore line and the natural rapids.

Access roads to get to the main landing places such as Lily Park, Mantle's Ranch, Pat's Hole, Island Park and Dinosaur Camp Ground need not spoil in any way the charm of this country and would cost only a small fraction of the amount proposed to spend for dams.

If, as some claim, these were the only sites for dams to control water flow there might be some reason for building them, but when other sites are available to provide all the water storage, power and irrigation needed, it seems extremely foolish to destroy this one remaining primitive canyon. This can easily be developed into one of the major tourist attractions of the state and nation. The local people who see only the big business boom of dam building are short sighted indeed, for dams here would destroy this major quality of the place—its wildness—and could at the best be only of short duration because of the

short time before they would be filled with silt, and useless.

The only ones that we have found to date who want these dams built are those who hope to profit by them (at the expense of the citizens of this whole United States). The Reclamation Service want to build an immense dam, powerful financial interests want cheap power to develop their phosphate beds and make a few million at our expense, and these people have employed smooth talking agents to sell the advantages of a business boom to the local residents.

We owe it to our descendents to preserve this one remaining spot of wild grandeur.

TRY THE GAS PLANT FOR A DIFFERENT HEDGE

Some instances occur where a low hedge of perennials might look well; for instance in a small yard where all the lines are formal. A hedge with flowers might be just the thing at each side of a short walk from the gate to the house, making the beds eighteen inches to two feet wide and of the same depth.

There is no better, hardier plant for this purpose than the gas plant (*Dictamnus fraxinella*) which looks well for many years. This plant does not grow rapidly, but a row, ten or twelve inches apart, will, in not too long a time, make a compact hedge, with a dark green, lustrous foliage, two feet tall and fully as broad. The flower stalks are borne well above the foliage, some pink, some white.

H. F.

DO NOT: Do not feed shrubs nor trees any more this year—it may start new growth which will winter kill and do not prune any spring-flowering shrubs now or you may remove the flower buds for next year's bloom.

H. F.



BRINGING THE GARDEN INDOORS

Notes from Good Gardeners, Compiled by KATHRYN KALMBACH

ALMOST every gardener has had experience in bringing in geraniums and begonias, which have spent the summer in the flower border but here we have tried to report a few experiences with some of the less familiar plants.

Excellent articles on bringing plants indoors may be found in back numbers of the Green Thumb. Here are the titles of a few of them:

"Turn Your Thumb Green This Winter," by Rebecca Enos—November, 1950.

"Home Forced Spring Bulbs," by

Myrtle Ross Davis—November, 1949.

"As for House Plants, Try a Little Pioneering," by Allen H. Wood, Jr., October, 1948.

Dwarf geraniums may not be new to the experienced gardener, but they were new to me. Part of my Christmas present from my husband last year was a collection of these interesting dwarfs from Holmes C. Miller of Los Altos, California. I have been following the excellent directions in his catalog, and find the little plants

like sunshine, but not hot sun. They like an occasional feeding of Heller Gro, and putting the pots inside bowls helps to protect the roots from extreme heat. Some of my choice varieties are: Red Vesuvius, a brilliant orange-red; Pixie, a light coral pink; Sprite, deep coral pink and a variegated leaf. These little plants are a joy for their abundant bloom and dainty size—pots never more than 3 or 4 inches are needed. I recommend dwarf geraniums as an ideal hobby plant.—MRS. EDWARD MIXA, Boulder, Colorado.

Mrs. Ora Kehn of Arvada, Colo., has had success with a white spider lily, which is now 38 years old. Mrs. Kehn says her unusual plant requires very little care. Watch for a story about this plant in a forthcoming Green Thumb.

If you are fortunate enough to receive a blooming Azalea plant during the coming season, here is the way to handle it next summer so that you may enjoy its bloom again next fall and winter.

In the spring, after danger of frost, trim back your plant severely, add leaf mold (decayed oak leaves are best) to provide acid to the soil, and place the plant where it will have leafy shade, or filtered sunlight during the summer months. It is well to sink the pot into the ground about two inches deep, to secure it against being blown over. Your azalea may be better off if it is not repotted—if you feel it should be repotted, be careful not to disturb the ball of earth on the roots. Fill in pot with decayed oak leaves and peat moss. In any event give a good mulching on

top of the soil with leaf mold. Keep well watered. Now be sure to return it to the house before the nights get too cold, as a low temperature will cause the leaves to fall. With proper care your azalea may even begin to show a few blooms in late summer about the time you return it to the house. Frequent spraying during the winter months will be beneficial in the dryer air of the house. Mrs. S. Ashley of South Downing Street in Denver has been successful in getting several seasons of bloom by following these suggestions.

Now is the time to pot up some Spring flowering bulbs for late Winter and early Spring bloom indoors, says Mrs. Earl Davis of So. Fillmore Street, Denver. Mrs. Davis says only the top size heavy bulbs can be counted on to give good results. Six, seven or eight top size Crocus bulbs may be planted in a large bulb pan. Use good potting soil and plant with just the tips of the bulbs above the surface, firming the soil tightly around the bulbs, to prevent their heaving. Store pot in a cool, dark closet in the basement, and water sparingly during the rest period. When growth starts, bring gradually into lighter and warmer locations and increase water ration. And here's a tip—buy the blue Crocuses; for some unexplained reason, the yellow have not been successful in forcing. Only new bulbs may be forced in this manner. Deeper pots may be used for hyacinths and the early tulips. Mrs. Davis has successfully forced the early double tulip "Peach Blossom," a dainty pink.

(See Mrs. Davis' article on potted bulbs in the November, 1949, Green Thumb.)

**Come to the Plant Auction, Civic Center,
Saturday, Oct. 13th**



Mrs. Sue Johnson and Mrs. Daisy Hastings in Mrs. Hastings' Garden.

LOOK AND LEARN GARDEN VISITS REPORT

I feel like saying "WOW" when I look back at the success of our first year's garden visits—which success, incidentally, was largely due to the wonderful cooperation of the garden owners, the experts and the guests, of course! I know everyone, who went to the various gardens, was highly pleased and most anxious to have a follow up next year.

There were between 125 and 150 guests on the first tour through north Denver gardens—between 195 and 250 on the second through Park Hill gardens—and between 100 and 125 on the last through southeast Denver and Englewood gardens. We feel that these figures are quite gratifying and show that our good Denver gardeners appreciate good gardening practices, and most certainly the help

of the men and women who took time to act as our experts.

Thanks again, to all of you, garden owners, garden experts, and guests.

MRS. G. F. JOHNSON, Chairman,
Look & Learn Garden Visits, 1951.

I might add to the above report that the ones most responsible for the success of this first series of garden tours was Mrs. Daisy Hastings, who conceived the idea and lined up the gardens, and Mrs. Sue Johnson, who worked many long hours arranging all the many details necessary in making an event like this run smoothly. Incidentally the money received from tickets will enable us to publish a better Green Thumb for a few months longer.

EDITOR.



OCTOBER GARDENING

Illustrations from the garden of Mr. and Mrs. Glenn Johnson.

Trim the Hedges



and the Edges.





Clip the unsightly dead and scraggly twigs out of shrubs and trees



and the faded flowers from the perennials and annuals.

Rake up the weeds and rubbish.



Repot the house plants as necessary and move them indoors.



Reseed bare spots in the lawn as soon as possible.



Set the mower a little higher (2 inches) and let the clippings lie.

Spray or dust with a contact poison to kill the aphids which frequently invade the Dogwood, Snowball and Euonymus shrubs just before the leaves fall. This will eliminate early spring damage.

Wrap the trunks of young tender-barked trees like Mountainash, Linden, Hard Maples and Oaks. Use burlap, screen wire or waterproof paper, or set a board up on the southwest side of the tree.





Mulch the beds with peat, leafmold or grass clippings.



*Water everything **THOROUGHLY** before the ground freezes up, especially the newly transplanted things.*

After all the garden work is done take time out to relax and enjoy your garden. Begin now to work towards a better garden next year by making notes of this year's successes and failures. Lay out a course of study to increase your knowledge of plants, soils, fertilizers, insecticides or other things that interest you.



CAUSES OF AUTUMN COLOR

The old-timer who says, "If we don't get an early frost we'll have no Fall color," may be more nearly correct than some who tell us that autumn color in plant foliage depends on minerals contained in the soil, and that weather conditions have nothing to do with it. It is a well-known fact that the autumn coloration of foliage is spectacular some years while in others it is so drab that it excites no interest. Dr. Donald Wyman, of Arnold Arboretum, offers the following explanation for this phenomenon:

"In the first place, leaves are green because of a highly complex coloring matter called chlorophyll which is always present in them. It is being continually manufactured and at the same time continually destroyed. During the greater part of the growing season the rate of manufacture of the chlorophyll about equals the rate of its consumption. In the Fall the rate of manufacture of chlorophyll gradually declines, although its destruction continues rapidly. Eventually there comes a time when little if any chlorophyll is being manufactured and most of it has been destroyed. This results in yellow foliage. Yellow coloring pigments are omnipresent in the leaves but are masked during the growing season by the chlorophyll.

"In the Fall there is usually a large amount of yellow color—but it is the reds and scarlets which make the truly effective color. Their formation is not so simple. These colors are much more dependent upon weather conditions. They are formed in the leaves which have accumulated a large amount of sugar, the chief food manufactured by the leaves. Plant physiologists have shown that with temperatures of 45 degrees F. or lower it is impossible for the sugar stored in the leaves of the plant to

move to the trunks and roots. In other words, because of cold night temperatures such sugars are 'trapped' in the leaves. When a large amount of sugar is trapped in the leaf in the Fall conditions are perfect for the manufacture of red coloring pigments, the Fall colors that are enjoyed by everyone.

"If during the early Fall of one year there are many warm, bright, sunny days followed by cool nights, conditions are perfect for splendid Autumn color. On the other hand, when there is much rainy and cloudy weather and the leaves can manufacture little sugar, or when the nights are very warm and the sugar is not 'trapped' in the leaves such conditions make very poor Autumn color."

JOHN W. SWINGLE.

From October, 1948,
Shade Tree Digest.

Guard most carefully against fire. Mr. Enos Mills says, "Since the days of 'Pike's Peak or bust,' fires have swept over more than half of the primeval forest area of Colorado. Some years ago, while making special efforts to prevent forest fires from starting, I endeavored to find out the cause of these fires. I regretfully found that most of them were the result of carelessness, and I also made a note to the effect that there are few worse things to be guilty of than carelessly setting fire to a forest. Most of these forest fires had their origin from camp-fires which the departing campers had left unextinguished. There were sixteen fires in one summer, which I attributed to the following causes; campers, nine; cigars, one; lightning, one; locomotive, one; stockmen, two; sheep-herders, one; and saw-mill, one."

H. F.



BUCKEYES AND HORSECHESTNUTS

By GEORGE W. KELLY

THE genus *Aesculus* includes both the native Buckeyes and the imported Horsechestnuts. The outstanding characteristic of the genus is the palmate leaves and the large smooth-shelled nuts. Botanists differ considerably as to the number of species in this genus but there are at least two known species each from Japan, China and India as well as one from California that are included in those called Horsechestnut, characterized by sticky winter buds. There seem to be many named species of the native trees called Buckeyes, but the most commonly known are the Sweet Buckeye, *A. octandra*, and Ohio Buckeye, *A. glabra*. There is also a dwarf Buckeye, *A. parviflora*.

The name "Horsechestnut" is supposed to have originated with the Turks in 1565 where they used the

nuts as medicine for their horses. "Buckeye" is probably from the faint resemblance of the nuts to a deer's eye. The nuts are very bitter and are generally considered as poisonous, though it is unlikely that any one would eat enough to hurt them.

These trees are among those which should be more generally planted in this area. They are very attractive when in flower and form rather regular heads which are attractive all the year. Ernest H. Wilson includes them in his book, "Aristocrats of the Trees" and refers to them as the "Handsome Horsechestnuts."

These trees are very deep rooted and so are slow growing and rather hard to transplant. The trees should be moved when small or be root-pruned in the nursery if they can be expected to move easily.

A FEW RULES FOR SUCCESS WITH HARDY MUMS

By ROBERT O. PARK

PLANT local grown stock. Remember that much of the eastern soils are acid and most of ours are alkaline. Consequently we have found some varieties that need a couple of years to become established and a few just won't make it.

Plant either good root divisions or rooted cuttings from the middle of May through June. They have all of three months to grow into robust plants, full of blossom. You may reset small clumps late in August or early in September, but you stand to lose some during the winter because they might fail to make enough new root.

Do not crowd the plants. Allow 18 inches all around, otherwise a spindly plant is produced. Locate where they will have at least half a day's sunshine.

Pinch off the tips of all main branches in June when the growth is six to eight inches tall. This forces more branches and produces a stockier plant. With the late varieties, it will

bring them into bloom one to two weeks earlier.

Dig and divide all two year old plants the third spring *after* growth has started. Throw away the old center stock and plant only the young plants around the outside edge of the clump. Old clumps become root bound and root rot develops which may take the whole plant.

Do not give too much water but enough to prevent the stems from becoming woody. And not too much fertilizer. Good garden soil of normal fertility is sufficient.

Beautiful Aesculus in City Park, Denver.



SEEING IS BELIEVING

GEORGE KELLY

IT IS often difficult for the man-on-the-street to form an accurate opinion on subjects which are controversial such as the present one on the use of range land. Officials of the U. S. Forest Service, who are our guardians of the public lands, have maintained for some time that many areas have been, and still are, being overgrazed, which is causing excessive runoff of water, silting of streams and floods.

Stockmen sometimes contend that this menace is overemphasized and that areas which are now almost denuded of the natural cover have always been that way.

A sure way to settle the question is to compare land which for some reason has been fenced and kept from grazing and that adjoining under the same soil and weather conditions which has been overgrazed.

Recently we had a chance to compare such an area near Rollinsville. The fence shown in these pictures divide open range land from an area of several acres which has been fenced and grazing kept out for some ten years. The pictures are dramatic evidence of what will grow under

Nature's plan and what is left with this degree of grazing. On one side is dense growth of a great variety of succulent grasses, while on the other is a low growth of a few hardy grasses, many dandelions and weeds. On one side the aspen and willows and other shrubs are full of leaves to the ground while on the other they are stripped as high as stock can reach.

Even though there is some sod left in the overgrazed area, the important "blotter" is gone. A significant test was made here. A ring of metal of about a foot diameter was driven into the soil on each side of the fence and an even gallon of water poured in each. On the side where the blotter remained the water soaked into the loose soil in just ten minutes while on the other side of the fence a few feet away it took 35 minutes to disappear. This would indicate what would happen in a hard rain. No soil could be seen on the undisturbed side while there was exposed soil around each plant on the abused side.

No one would advocate letting all areas go in a natural way with no grazing whatever, but certainly no





one could see such a demonstration as this without agreeing that there has been dangerous abuse of many areas. The experiments which have been carried out indicate that moderate grazing will leave land in very near as good condition as where there is no grazing at all, but that excessive grazing leaves land in progressively worse and worse condition.

For the sake of our future citizens we can not afford to overdo a good thing just for a little immediate profit. The future of the stock business as well as the future use of our public lands for recreation and water storage all depend on wise management now.

WHEN OUT ON YOUR WEEK-END TRIPS

Although snake bites are very rare, the bite of a poisonous rattlesnake or copperhead is very dangerous, requiring heroic treatment. Bayard Christy in his "Going Afoot," says, "Suck the wound, cut it out at once, with a sharp knife, fill the incision with permanganate of potassium crystals and drop water on the permanganate."

Ammonia is an antidote for insect stings. H. F.

HOW TO TAKE CARE OF GLADIOLUS BULBS

Do not dig until after first killing frost. Allow them to dry in any airy place, then cut off all but 2 inches of the tops. Old corms at the bottom of new ones must be removed. Never strip off fibres around bulbs. Treat with DDT to prevent thrips. Place just a few bulbs at a time in paper bag, add 3 spoonfuls of DDT and shake bag until corms are entirely covered with the poison. Treat all you have in this manner. Keep in a cool, dry cellar in trays to allow air circulation.

H. F.

Equipment for the absorption test.





HEDGES, WITH A LITTLE HELP ON HOW TO PLANT THEM

HEDGES have come to be one of the important features of American gardens. They are used both as a division between neighboring gardens and also to divide different parts of the same garden. In choosing plants for a hedge the chief considerations are that they should be sturdy and able to stand both exposure and severe clippings. Hedges within the garden need really be only screens and may be anything from six inches high upwards. In planting care should be taken that they are not put in too deep or too shallow in the soil. The soil surface should come exactly to the soil mark on the stem, which indicates the depth at which they were growing in the nursery.

Privet is most used for hedges in this area because of its quick growth and its easy adaptability; it should be cut back immediately after planting to stimulate the growth of side branches. If the plants are allowed to grow too long without trimming they lose the lower leaves and become

open and straggly. When a foot tall it should be cut back again. This cutting should be continued in order to develop a heavy, bushy bottom. When hedge is of the desired height, it is a good idea to shear again, once in June and then again in July to keep in good form.

If a thick, tight hedge is wanted, plants should be set about twelve inches apart, in two rows, staggering the second row—a single row, however, is generally adequate.

We tried restoring a very old hedge on High Street, last year and when watering, fertilizing and spraying failed, we cut the whole thing to within three inches of the ground and thinned it out. It was given lots of water and fertilizer and today it is one of the best-looking hedges in the block.

One reader tells us that her very old hedge is not doing too well and asks what she should do about it next year—it is a good plan to give it balanced food of about one pound

to 15 foot of run. This food should be watered-in well and feeding kept up every four or five weeks; August should end the feeding, however, for new growth may not have time to harden before it freezes. The soft wood may winterkill and other good wood may pass out with it.

Use the trench method for planting. After spacing plants, each should be adjusted for depth, then the earth filled in. A tape or some such measure should be stretched along one side of the trench, to help in spacing also to keep plants in line with each other. When the job is finished, plants must be in absolutely vertical position and after trimming, should be well watered as with any other plants.

H. F.

NOTE: Studies in the Library at Horticulture House on the subject of Hedges: "Hedges, Screens and Wind-breaks," by Donald Wyman; Chapter IX in American Garden Book.

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NATURE LOVER

Charley Ott came into our office a few days ago carrying a whole armload of fine photographs which he presented to us for use in the Green Thumb.

Many of his fine pictures have appeared in recent issues and have done much to brighten up the pages of the magazine. Charley not only is a good photographer but has an appreciation of the beauties of nature and an instinctive feeling for good design.

The occasion for Charley's bringing us the pictures at this time was that he was cleaning house to start on a wonderful vagabond expedition to Alaska. He has rigged up a dark room and living arrangements in his panel truck and will drive to Alaska with self-sufficient equipment so that he can stop when and where he pleases. We know that he will get some wonderful pictures and we hope that he can sell enough so that he can continue in this work. He has done the thing that many of us wish we had the nerve to do. Good luck to him, and we hope that he will send us a picture once in a while.

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Call on the experience of the firms listed below to help in the selection of plants which will give best results in Colorado's difficult climate. Do not overlook the value of thorough preparation of the soil in which you will plant your trees, flowers or lawn. The best of plants can not give good results when planted in poor soil.

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the rear of the House while you make
your selection.

Questions and Answers

What kind of soil do Peonies re-
quire, and is November too late to
plant them? Lucile Atwater, Denver.

Peonies need only a good average garden soil—the kind you would give to corn and potatoes. While they enjoy good food, overfeeding often prevents flowering. Please note that their chief requirement is water, especially here in Colorado, in May and June when their buds are forming. When planting Peonies, use plenty of bonemeal, which is rich in phosphoric acid and affords the plants a slow, safe supply. In the spring fork cow manure into to soil, being careful to use only between the plants, never over them.

It is much better to plant Peonies earlier—September is the ideal month. Spring planting is successful, too, if properly done. Failure is often due to dryness. Peonies, you know start very early in the spring and if dry, soak the roots for three to four hours before planting. They are very easy and can be had by anyone, if a few precautions are obeyed.

H. F.

A NICE PLACING OF THE SHOOTING STAR

Dodecatheon meadia may be plant-
ed between the spreading dwarf plants
of that admirable bell-flower—Cam-
panula carpatica. The bell-flowers
may be planted twelve, fourteen or
even eighteen inches apart and in
the spring, when the shooting stars
are up and blooming, the Campanula
foliage is hardly in evidence but in
the summer time it occupies all the
space between them. When finished
flowering the part of the shooting
star above ground turns brown, dies
back and disappears to return again
the following spring.

H. F.

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THE LITTLE WILDLING TULIPS

By MILDRED STEELE

AS THE fall catalogues make appearances, one should give more than a casual glance at the "Species Tulips" where listed. Their blooming season is long, the earliest coming on at Crocus time, and the latest, after the Darwin tulips are gone.

These little bulbs are reasonably priced and perfectly hardy. They can be planted in out of the way places, as for example, at the outside perimeter of shrubs, where their shade keeps any grass or weeds from becoming too vigorous. There is plentiful sun when the tulips bloom, just before the shrubs leaf out. The leaves of the tulips then have an inconspicuous place to ripen and complete their functions without a chance of rotting off with excessive watering, as they might in general planting. They can likewise be tucked away here and there in the rock garden. The rocks furnish an ideal "mulch" for them during the heat of summer, without their receiving too much moisture.

I do hope you will all become acquainted with some of these wildling tulips from distant lands, all decked out in their gayest native at-

tire. They are rather like Gypsies, and all are so individual. Maybe they should be called the "Gypsy Tulips."

I have had most of the varieties listed by the Wayside Gardens. "Lilies" by Romaine B. Ware lists some, generally. The largest listing is in the P. deJager & Sons catalogue from Holland, offices in Chicago, Illinois. Get a friend to send with you to make up the ten dollar minimum required by this grower.

While studying the lists of tulips, let your eyes wander to the page showing species crocus. There are many of these little untamed visitors to the catalogue pages that are very joyful additions to the garden, especially the fall blooming varieties.

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THE POSITIVE VIEW

(Extract from an Editorial in Nature Magazine)

DURING the past decade conservationists have been, by force of circumstance, too largely on the defensive. Up to the start of World War II we had been through a period of gain; a period that had seen the creation of the national park system, the establishment of a network of wildlife refuges, the development of a soil conservation program, and the crystallization of public opinion—if not fully effective action—against water pollution. Then came war, followed now by emergency conditions. In such times private interests, and, unfortunately, some government agencies, see and seize upon an opportunity to exploit those resources with respect to which we have developed a philosophy of conservation for posterity. Few of these demands have arisen from other than private greed, or lust for power on the part of certain government bureaus.

It was inevitable, therefore, that conservationists would be forced to defend past gains, and that their preoccupation with defensive battles would be at the expense of continued progress. Not that there have not been positive accomplishments, but these have been fewer than might have been the case if the time and energy of the conservationist had been less circumscribed. With grazing interests intent on a land grab, lumber interests envious of national park forests, power developers disdainful of the integrity of national parks and monuments, industries and communities unmindful of the effect of water pollution, conservationists are faced with the task of holding the line rather than pushing it forward.

There is one direction in which there has been positive thinking, and that is in the development of the

wilderness idea. And here, too, exists an opportunity for positive action. Recently the Second Wilderness Conference, called by the Sierra Club, was held in Oakland, California. Speaking at that meeting, Howard Zahniser, executive secretary of the Wilderness Society, outlined a task that remains to be done. He pointed out that the designation of areas of wilderness for preservation is as yet incomplete; that a system of wilderness should be sought as soon as possible, and proper protection given to such a system.

"A most determined effort should be made," Mr. Zahniser declared, "to provide for the security of these areas as wilderness. At present there are so many test cases on our hands—test cases of the public interest with reference to wilderness preservation when in conflict with other enterprises—that conservationists have not had the time or energy to pursue the all-important positive program that alone can prevent the constant recurrence of these controversies.

"Hence it is of great importance to treat such a campaign as that now current for the defense of Dinosaur National Monument as a positive drive to attain this better security. The proponents and supporters of the Echo Park and Split Mountain dams in this monument have been greatly impressed, I am sure, by the indignation and protests aroused as the public has become aware of the issues. Wilderness preservationists should not, therefore, relent before the full objective is realized, should not stop short in this effort of obtaining not only the elimination of these two dams but also the firmer protection of all the wilderness we are preserving.

"As soon as we have a clear consensus of conservationists we should most certainly press steadily for the maximum security possible; that is, congressional establishment of a national wilderness system backed by an informed public opinion."

DO YOU LIKE THIS ISSUE OF THE GREEN THUMB?

Have you received some good idea from it that will make your garden work easier or more pleasure to you? We should have twice as many members so that we can afford to put out expensive numbers like this. We can have twice as many members if each of you will get one. Try it.

Should I or should I not feed Lilies? Denver.

Lilies, as all other plants should be fed occasionally, and a thoroughly-rotted compost spread over them to the depth of an inch or so, will act as a mulch in winter and feed the ground at the same time. Rotted leaves make a good mulch which can be spaded into the ground in the spring. A mulch of leaves on the lilies all summer prevents them from drying out too much. Give them a good soaking just before blossom time. After they flower this is not necessary.

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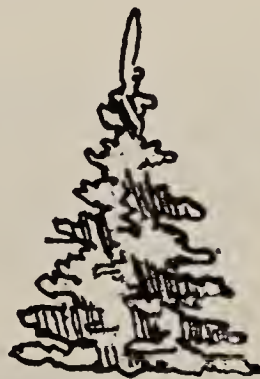
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I have seen Americans stand and sing *My Country 'Tis of Thee* with tears of emotion in their eyes and selfless exaltation in their bearing.

But I just don't believe it.

The more I see of our blasted rocks, dammed rills, cut and burned woods, and bulldozed hills the more convinced I am that the average American has no consideration for them whatsoever. Or if he does, he seems apathetically unmoved by the destruction around him.

We love wealth, prosperity, and growth. We take pride in a high standard of living. We thrill to automatic gadgets, deep freezes, and jet planes. We boast of a mechanical, electrical, atomic civilization wrapped up in a package labelled, "Liberty, Democracy, and the Pursuit of Happiness—Handle with Care." There may be a super-streamlined Frankenstein inside. But God bless America. We love it.

However, there is another America. It is under our feet. It is around us. It is the land we live on—the forests, hills, valleys, mountains, and deserts we took from the Indians.

Do we love this America too? Well, maybe. But it looks to me as if we were so dissatisfied with its general appearance and arrangement that we are trying to change everything about it in the shortest possible time.

For, all over the country powerful interests, representing themselves as the majority, are closing in, bent on despoiling and obliterating every last vestige of original America. Although national parks preserve less than one percent of our land in primeval condition, giant dams are proposed for four

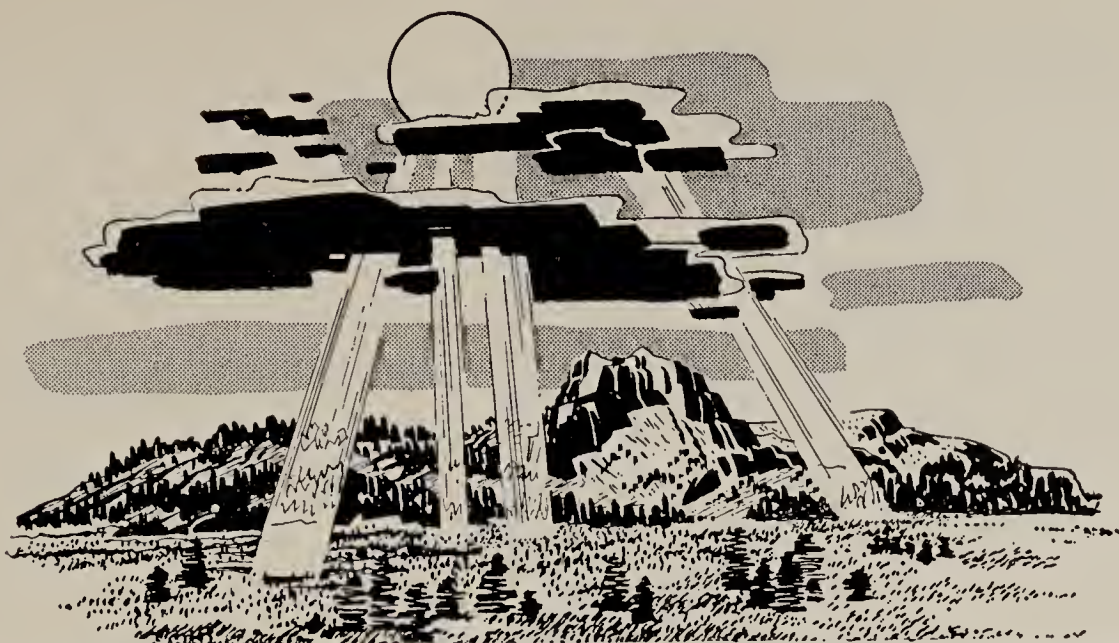
of them, and lumbermen demand the finest forests in a fifth. National forests provide less than one percent of the nation's cattle-feed requirements, yet embattled stockmen are asking for the forests as their private preserves. Miners and sheepmen want the national monuments. State parks are succumbing to commercial interests. Marshes are drained, lakes emptied, and predators exterminated so that wildlife suffers from unbalance. Each year thousands of acres of timber are indiscriminately hacked and burned, the range is depleted, soil exhausted, erosion accelerated, streams polluted, air contaminated.

Truly, this is a love that passeth understanding!

Years ago Americans who valued this original America became alarmed at the rapidity with which it was disappearing. They started a movement for the preservation of natural resources, both economic and scenic, which has ever since been known as CONSERVATION. From it has grown the national parks, national forests, national monuments, the state parks, and all other attempts to preserve some of our national heritage for the use and enjoyment of Americans who love, value, and appreciate the land they live on. Today, there are thousands enlisted in the battle to preserve the resources and character of our country. But they are still woefully in the minority.

The front-line minutemen of the revolution fought at Lexington and Concord for the America they loved. Those historic patriots won against great odds. It can be done again. But don't wait for orders. Start firing now! Join the present-day Minutemen by thinking, talking, reading, and spreading the importance of CONSERVATION.

—WELDON F. HEALD,
Hereford, Arizona.



SUN-DRIED CANADIAN

Although long known to garden authorities, the amazing soil-conditioning properties of Sphagnum Peat Moss are only now being generally recognized. It seems too good to be true that a product so low in cost can accomplish so much! Peat Moss improves the moisture-holding capacity of sandy soils; makes stiff clay soils light and friable; retains fertilizers longer; aerates the soil; protects tender plants against cold; and performs scores of other garden functions.

Be sure of genuine "SPHAGNUM" Peat Moss . . . insist on "Sun-Dried Canadian." The high standards of Canadian peat producers ensure the peat arriving clean, soft, odorless and sterile . . . its full, natural vitality preserved by the sun-drying process. Wherever peat moss is used . . . and compared . . . the name "Sun-Dried Canadian" stands highest.

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OCTOBER SYMPHONY

Come walk with me—Come run with me—
October wind is blowing—
And all the leaves—on all the trees
Are poised for flight—or going.

This king 'mongst maestros sets a pace,
When leaves—all reds and yellows
Float slowly, gently, on a breeze
To nestle with their fellows.

Soon—true to line—the tempo quickens
Leaves flee in crowds—the drama
thickens—

A tense finale is fore-shown—
No leaves remain—where leaves were
known.

Come walk with me—come—haste to
see—

October's Symphony.

MARY SPRIGG, Denver.

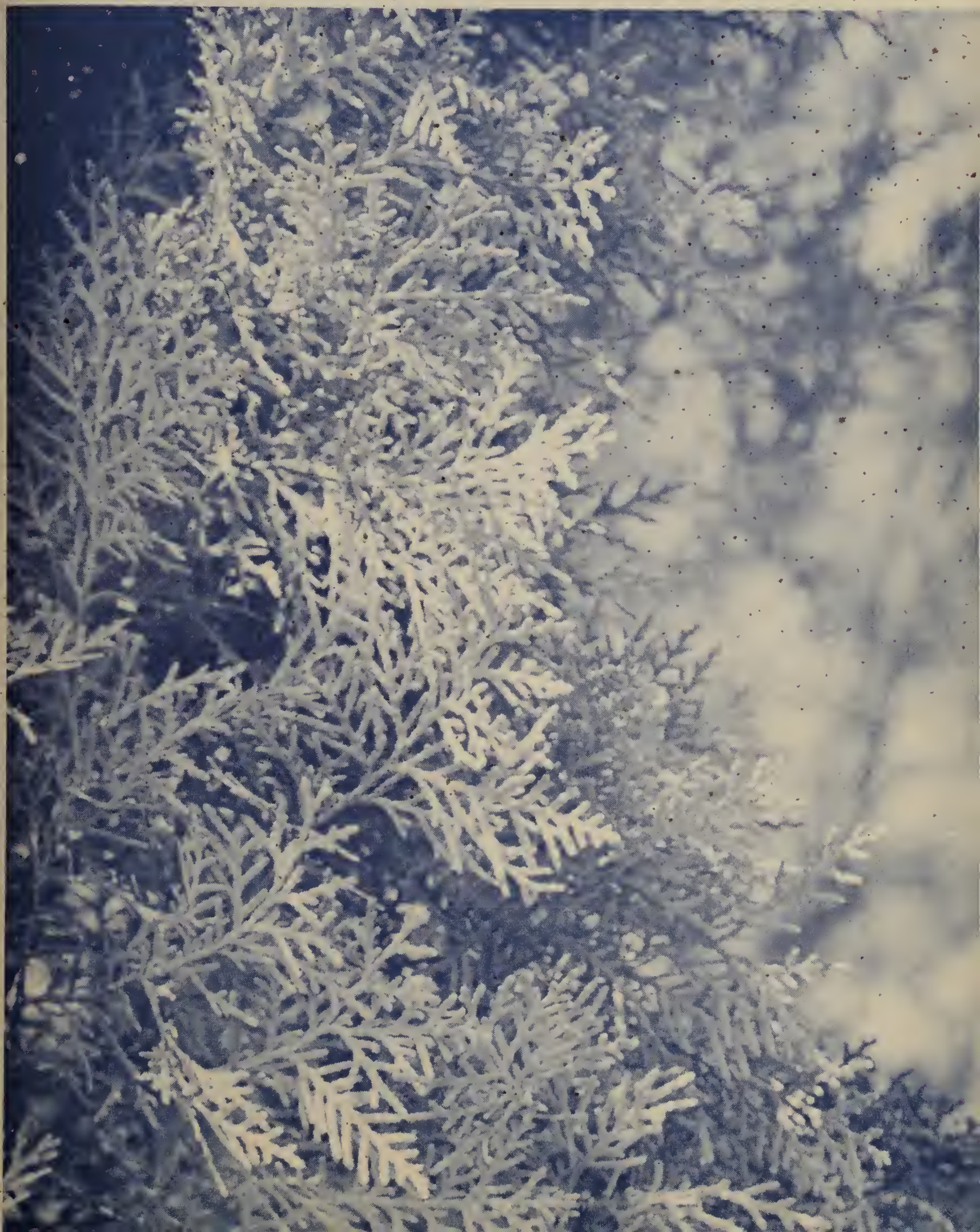


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The Green Thumb

Vol. 8

NOVEMBER, 1951

No. 11

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Picture on Front Cover by Bruce Korfage and Back Cover by Chas. J. Ott

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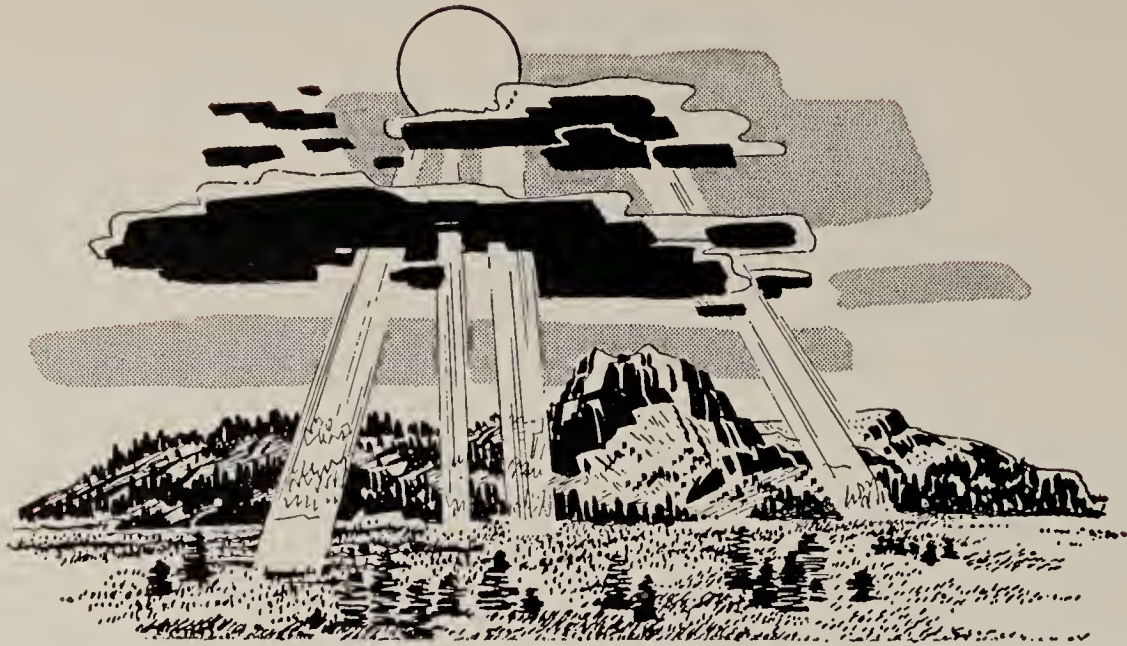
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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION

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Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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NOVEMBER SCHEDULE

Nov. 1, Thurs., 8 p.m. at Horticulture House. The Horticulture House Hikers will present a program of pictures and stories of the trips that they have taken in 1951. Anna Timm and Marjory Shepherd are arranging this event for the enjoyment of every lover of the outdoors.
Nov. 4, Sun. Leave Horticulture House 8 a.m. to see the Elk in Rocky Mountain National Park near Trail Ridge. This will depend on weather conditions.
Nov. 11, Sun. Armistice day trip up Geneva Creek and Webster Pass.

This is good fall country. Leader, Anna Timm.
Nov. 15, Thurs., 8 p.m. at Horticulture House. Mr. Waugh of the Fish and Wildlife Service will show a new colored movie produced by Encyclopedia Britannica entitled "The Living Earth"..
Nov. 18, Sun. Leave Horticulture House 8 a.m. for tour of Pinyon Grove Area above Fort Collins, site of proposed state park. Leader, George W. Kelly.
Dec. 2, Sun. Trip to see the Bighorn Sheep in the Tarryall Mountains. Inquire for more details.

HELP US—AND YOURSELF!

Another year is almost here—Those of you, whose memberships are due January 1st, will help us in our bookkeeping by sending in your renewals anytime now. Also, gift memberships can be handled more efficiently. We will hold up gift memberships, so they arrive a few days before Xmas, with your card or ours enclosed. All that are received now and before January 1st, save us much time and money that can be put to good use in our many activities.

HELPS YOU—One more bill off your mind at Xmas time and the New Year. A gift membership is greatly appreciated by those receiving them, not only at Xmas time, but for the entire year. Surely you can cross off one or more from your Xmas list with a membership to The Colorado Forestry & Horticulture Association, which includes 12 issues of "The Green Thumb!"

For:
NAME..... ADDRESS.....

From:
NAME..... ADDRESS.....

EVALUATING THE PHLOXES—FALL 1951

HELEN FOWLER

NOWHERE in America is it possible to grow better Phlox than right here in Colorado; this because of our relatively cool nights and our ability to water when the plants need moisture. Phlox is always the first to suffer from dry weather. For them to do their best, soil is always of first importance—it should be deep, well drained and rich in humus. Gardeners in this area seem to be giving special attention to soil preparation. Before the war we used tons of peat moss, obtained near Carter's Lake at Pine Cliff, Colorado, but now we are grateful for any kind of decayed vegetable matter.

Phlox likes rather a neutral soil with a pH of 6 or 7. We must remember that soils in this Denver area have not been covered for centuries with forests as in the east, so that the decayed roots of trees and their fallen leaves have never helped to enrich our soils. Have I told you of this old Italian gardener who raises vegetables on a 5-acre tract near Denver? He told me that he had been adding 30 to 40 loads of manure to the acre for the last forty years and he earnestly added that he believed within the next two or three years he would have the soil in pretty good shape.

If there are any Phlox failures, it is sometimes due to bad drainage in a clay soil, but not always; good drainage alone is not sufficient; it is necessary to lighten the soil above the drainage to allow the moisture to escape. Clay soil, cold and wet as it is in winter, bakes hard and cracks in summer heat, consequently allowing the heat to get down into the roots and killing them by over-evaporation. If the soil is poor, it is always easy to add top-dressing or to feed a weak

stimulant of manure water; soot, made by soaking it in a tied-up bag in water is also valuable for this purpose. Soot seems to enrich the color more than any other tonic.

By right selection Phlox may make the border gay from early May to far into late fall. The creeping kind (*P. subulata*) comes first and should always be planted for its bright effect with Tulips, the hardy Alyssum, Arabis, Iberis (hardy candytuft), the Violas and the old fashioned Bleedingheart. These first moss pinks come in rose, white, lavender, pink and red; the pink VIVID might be said to lead them all. There are also in this class EMERALD CUSHION and *P. satyria*—this latter is pure pink, about eight inches tall, does not creep as do the other creeping kinds, but always stays neat and tidy; by cutting back about half the length of the stems after blooming, it is likely to produce a good crop of flowers again in the autumn. This is perhaps the very finest of the early, low Phloxes. Should you plant the *P. subulatas* in the fall in a heavy soil, you are most likely not to find them in the spring; they prefer full sun, sandy loam and fairly dry soil.

In early May, Phlox *divaricata* is in full bloom too; it would not be May without this lovely lavender splashed all over the garden—along walks, the edge of borders, and in the rock garden.

The smooth Phlox *suffruticosa* comes into flower a little before the main group and continues on with it. Miss Lingard is the best of these, in fact it is considered the best early white phlox known. Last year it bloomed from late May until late September, with large heads of white



flowers with faint pink shading in the center. You better not try too much of Miss Verboom until you see what it does. Snowdon is a good white also of this class. None of these will grow in a heavy clay soil, but will last some longer if grown here in Colorado in a little shade,—not too much such as ferns need.

We come now to the large paniculata group. Snowcap, white, has a truss, measuring as much as twelve inches across; it is a Colorado origination, as you perhaps know and I have an idea that some of the later originations, is Snowcap and no other.

The Phlox genus is purely American but hybridization has been done chiefly in Europe, which has happened with many more of our plants. Too bad, but foreign trademarks mean something special to many gardeners. There are more whites but the above has been chosen because of their friendly bloom, clear coloring and because they are husky here in Colorado. Mrs. Jenkins is some taller and later. We still plant Von Lassburg

for the back of the border and for its large truss and strong stems.

In the salmon-pinks we find the largest number of the good hardy phloxes. First, E. I. Farrington, then Enchantress, Daily Sketch, Pantheon and many more. I have yet to find a salmon not attractive and not hardy in this region, except George Stipp—it doesn't seem to go through the winter. I am sorry to write, too that Elizabeth Campbell is too tender for this climate, for it is one whose color has never been equalled. Lillian is somewhat like it with a little larger flower.

Bridesmaid, Europa, and Count Zeppelin are the choice in the calicos. Columbia is a light pink and often called the continuous bloomer. Now we come to the choice of the Phlox experts—Mrs. Milly Van Hoboken. Color pink, with a slight and delicate mauve suffusion, the earliest to come into flowering and the last to go out. It is in full bloom today (September 5) and full of big, fat buds.

None of the so-called "blues" are

very blue. They are more lavender and purple. Colonial, Silverton, Aida are planted. Ethel Pritchard is better in the house than out. Caroline Vandenburg is the most attractive of the lavender shades. If one might dip a brush into violet and mauve paint and give a swish to a favorite white, he might get something close to the lovely tones of the earlier *P. divaricata*. All the lavenders, however, gain by the inclusion of lights and shades, created by close association with other plants in white, light blue or pale yellow.

Phlox has everything in this Rocky Mountain Empire, and transplanting may be done at any time, even in full bloom, if taken up with a good ball of soil, kept shaded after planting and given plenty of water. The mixed border has always been the place to use it. Of course it must be a definite part of a whole scheme, and must not clash with associate plants. In very few cases would a border of a single color, such as is often advocated, be desirable. Have you not experienced a feeling of flatness and monotony, in a room decorated in a single color, without any relief? It is lifeless and dull. Certainly the aim of any definite color scheme should be simply a suggestion achieved by the emphasis of a certain color, rather than the exclusion of all other colors.

PREPARE YOUR SOIL FIRST

If you have just built or bought a new home and it has cost you more than you anticipated, don't make the mistake of neglecting the proper preparation of a new lawn because of the expense. If you do not plan to have it done professionally, there are some precautions you can take to insure a good lawn in the years to come.

The best investment toward a good, easy-to-keep lawn is a well-prepared soil. This may mean carefully removing plaster, rubbish and poor subsoil and replacing it with good top soil. It may mean adding humus in the form of manure, peat or leafmold. No surface applications of fertilizer later will take the place of this initial preparation. When you are preparing a lawn around a home just completed, be on the lookout for pieces of board, cement chunks, or other material just under the surface. These if not removed, will cause your grass to become brown quickly.

Prepare a good soil for your lawn and gardens at the outset. It will save you time and money later and you'll have a beautiful yard of which you will be proud.

DO YOU HAVE A DEE-ZEE GARDEN?

DEE-ZEE Gardens depend on Dahlias and Zinnias to hide their defects in design. If yours is one, watch it after these colorful flowers are gone. A garden with good lines is pleasing even without color. If you are in doubt, photograph it in black and white. A good garden looks beautiful even in mid-winter with snow replacing flowers.



A MODERN GARDEN

There is nothing new about the "New Look" in Gardening. A good garden fits the owner's needs and always has. If the present need is restfulness and usefulness, simplicity and ease of maintenance,—then do away with fussy flowerbeds, corners that need grass clippers, trim hedges that get out of bounds, and meaningless "beauty-curves".



WATER IN HOME GARDENS

A dry climate invites garden pools. Can't you bring back to your memory a cozy nook where a refreshing bit of water gives life to an otherwise uninteresting garden spot?

The Spanish used the secret in their patios, the Babylonians in their long ponds, even the early Egyptians had pleasant pools in their vineyards.

Colorado's gardens depend on irrigation; isn't it surprising we have done so little to make full use of the esthetic quality of the water that feeds our plants? We need more reflecting pools, more lilyponds, more fountains, more running water to liven up our outdoor living rooms.

M. WALTER PESMAN.





Give us YOUR favorite combinations so that we may pass them on to other good gardeners.

For Spring Effect — A deciduous woodland patch in partial shade—Reddish buds and deep pink flowers of Redbud under which are grouped the blue colored Grape Hyacinth. Among the rocks along the path—Bleeding Heart, Columbine, and yellow English Primulas or Rue Anemone, interspersed with the Colo. Male Fern (*Aspidium filix-mas*). Blossoming bulbs of the *Scilla campanulata* in blue, pink, and white blend with the delicate pinkish fronds of the Maidenhair Fern. Later their yellowed leaves are covered by the mature fern.

—ED WALLACE.

My favorite combination for Spring: *Anchusa myosoides* and pink tulips—Good in leafy shade.

—K. KALMBACH.

One or two planting effects are as synonymous as “ham and eggs”. What could be more effective and more suggestive of plant pals than a planting

of hybrid Delphiniums and Oriental Poppies at or near the base of any of the taller growing shrubs? Or a grouping of Daisies, Coreopsis and Gaillardias in the far corner of the yard with Butterfly Bushes as a background? To this might also be added a few of the earlier flowering fall Mums, or Azaleamums as a border.

—SCOTT WILMORE,

Poet's Narcissus with underplanting of *Myosotis palustris*, or *Myosotis* with yellow violas.

—HELEN M. ZEINER.

For all year effect—Two silver colored globe shaped Rocky Mountain Junipers (*Juniperus scopulorum*) with a staked Pfitzer (*Juniperus chinensis pfitzer*) with a creeping Sargent, Wyoming or Black Hills Juniper in front of all (*Juniperus chinensis sargentii* or *Juniperus horizontalis* Wyoming or *Juniperus horizontalis* Black Hills).

ROBERT E. MORE.

Grape Hyacinth, Heavenly Blue—This Muscari literally stains the ground if planted in large numbers—colonies. One time, I read in Peter Barr's catalog, I think, this grape hyacinth has a pleasing scent like that of a carnation. I have not noticed it but I will take particular pains to watch for this in the spring. There are many ways to use it—on edges of beds, among *Phlox subulata*, in any color, used in clumps between Peony plants, (its blue flowers associate well with the young peony shoots. Never plant it anywhere but in the sun and never in the rock garden. It will take the whole place for it propagates from seed and also from the bulbs. If you like opposite harmonies you will like it as a cut flower with bunches of yellow Polyanthus.

This gay detail along a garden path—For early autumn, *Phlox coquelicot* and *Campanula lactiflora*; Delphiniums for early July, the new hybrids behind a row of *D. belladonna*; for June flowering, the pink and the lavender German Iris, pink Celeste and the soft *Pallida Dalmatica*; for very early spring lavender and purple Crocus along the margin of the bed.

Tulips and Crocuses might be planted between clumps of Heuchera and *Campanula carpatica* on the edge of the border thus keeping the entire bed in bloom from Crocus time until frost.

Prunus, any of the Stone-fruits, such as plum, cherry, peach, nectarine, apricot, almond, with ornamental foliage and flowers will make a gay note in front of evergreens.

Yellow and sky-blue is pretty in the use of Primulas and Forget-me-nots in a north border where it is damp.

There are few more lovely associations than the yellow flax (*Linum flavum*) and *Campanula carpatica* both in blue and white in the sun in a well-drained soil.

And the Columbines, the most enchanting of flowers. Plant white ones with *Anchusa myosotidiflora*, pink ones among the spikes of lavender Camassia and our own *C. coerulea* with ferns and bloodroot. I am sure Columbines like shade and acid soils.

—HELEN FOWLER.

To make your plantings a little more interesting, try some combinations of different plant material. Here are a few good ones that I have observed:

Cutleaf-weeping Birch with Red Dogwood. Make a group planting using one Birch and two Dogwoods. This gives good winter effect with the red bark of the Dogwood and white bark of the Birch.

Dolgo flowering crab with Blue Mist Spirea. This combination is good when the Dolgo is in fruit with bright red crabs and the grey foliage and misty blue flowers on the Spirea.

Russian Olive combined with Prunus Cistena, planting the cistenas in front of the Russian Olive.

Pfitzer Junipers faced with Floribunda Roses. There are so many really fine floribunda or polyantha roses on the market now that you may use your choice of color. If possible, give this planting an east exposure. This makes a rich colorful group planting.

Pinyon Pine with Betty Prior rose (*Floribunda*) Betty resembles a flowering Dogwood somewhat and grows tall with single pink blooms.

Rosa rubrifolia planted in front of a white fence or a white building is a fine thing with its reddish foliage and orange seed-pods.

A rose bed of the two single roses, Dainty Bess and Whitewings. Use two thirds of one color and one third of the other color, your choice.

Pacific Hybrid Delphinium in the blue shades "Summer Skies" series planted with Regal Lillies make a nice combination. The pastel shades of "Guinivere" series of Delphs are good with the good long blooming white phlox "Colorado Snowcap". Try white Delphs with the good pink phlox "Lillian". Any pink phlox is good with Shasta Daisies.

The late blooming lilac Villosa looks well planted with pink peonies, Sarah Bernhardt or Mons Jules Elie to name two good pinks.

Mahonia Aquifolium, Oregon Grape looks mighty fine with Pfizers or any spreading type evergreen. Be sure to allow at least four feet between plants.

For the semi-shaded area plant a clump birch with a couple of variegated dogwood at the base. Lay in a few moss covered native rocks with Seiboldi sedum sprawling over the rocks.

Another good deal for the shady corner would be Lady Fern, Maiden-hair Fern, Jack-in-the-Pulpit and Bleeding Heart. Make sure the soil is put in condition with plenty of leafmold, peatmoss and well decomposed manure before planting.

Artemisia Southernwood, Silverking makes a good background planting for a low growing perennial either pink, blue or yellow.

Local Nurseries carry all the above mentioned material in stock. It can be dug fresh for you and the plants be in your garden before having a chance to dry out.

—CLAIR ROBINSON.

"PLANT PAL" NOTES

CLAIRE NORTON



"Parrot Tulip Fantasy along the borders of a bed of lupine, under a spreading old elm tree, with evergreens and a split sapling fence for background."

"The focus of interest in a small city backyard garden is a malus below which a blue vase, the loveliest, softest blue, rests. In the background, tall white tulips against the dark green of shrubbery."



"A shaded garden corner where bleeding heart blooms with Phlox divaricata and early anemones."

"A choice spring picture of pink hyacinths, pale lilac tulips and white narcissuses over a drift of white and rich purple violas, all planted in front of swaying masses of columbine and peony foliage and backed by Spirea Vanhouettei."

"Porcelain blue hyacinths surrounding a small, quiet formal pool, lined with blue tile, the bed edged with yellow alyssum and forget-me-nots".

"A tableau of tall red tulips beside an entry way, where their slender graceful stems and the flames of their vase-like flowers silhouetted against the white of the stucco welcomes one with a cheery 'How-do-you-do' "

"Stiff little grape hyacinths marching along a border edge behind brown stones—a thrilling color note."

"A Persian lilac opening against a background of a giant silver juniper."

FACTS ABOUT ORGANIC GARDENING

By L. H. MACDANIELS

Reprinted by permission from The Cornell Plantations

ON my desk are a number of pamphlets on organic gardening. These have come from various sources in England, New Zealand and the United States. One of them had printed in bold black letters on the cover, "Will there be a second black death?" The inference is that the plague and black death during the Middle Ages were caused by depleted soils and that unless we now begin to practice organic gardening, we are headed for another such plague. This is surprising since the facts are that "black death" is the bubonic plague and this is a virus disease that is spread by fleas which are carried by rats. There is no direct relationship between this disease or its spread with anything in the soil either organic or inorganic.

Another pamphlet has on the cover, "Are chemical fertilizers ruining our soil and our health?" The text of the pamphlet plainly infers that the physical ills of modern man, including colds, bad teeth, heart trouble, gall stones, ulcers, arthritis, rheumatism, and cancer are related to the use of chemical fertilizers. There is a statement: "Modern man is apparently getting sicker and sicker with each generation." The facts are that in America where fertilizers are used in increasing amounts man's life span has been increased about 20 years in a generation as established by reliable vital statistics.

A third pamphlet is entitled "Compost Making." It advocates using a mixture of seven ingredients, including yarrow, stinging nettle, dandelion, chamomile, valerian, oakbark, and honey. A suspension of the ground leaves of these herbs added to a compost pile "activate" it and give it ex-

ceptional properties. It doesn't take much honey. Just rub one drop into one dram of sugar of milk until the honey is completely absorbed. Just why the paw of a newt and the wing of a bat are not added is not explained. The facts are that decomposition of organic matter to form that can be used by plants is brought about by bacteria and, as discussed later, the growth of these bacteria and the rapidity of decay can be aided by supplying the right conditions of moisture and nutrients for bacterial growth. There is nothing occult about the process and the drop of honey and other hocus pocus is not necessary.

Within these pamphlets is a hodge podge of truths, half-truths, propaganda, and to be charitable, complete disregard of known facts. We learn that organic gardeners consider themselves a cult and some at least subscribe to a mystic philosophy known as anthroposophy. Spreading the principles of this cult is apparently pursued with considerable energy and enthusiasm.

Truths

The truth in organic gardening is basic and important. Agronomists agree that organic matter in the soil is indeed an indispensable or at least a very valuable ingredient. It improves soil tilth through granulation of the soil particles, increases water holding capacity and through its decay releases nitrogen and other nutrients. Carbon dioxide from decaying materials helps bring minerals into solution and so makes them available to plants. These are only a few of the primary and secondary benefits of organic matter in soil.

It is also true that productive soils do contain many microorganisms of one kind or another that contribute to the fertility of the soil either directly or indirectly. Soils also may contain destructive diseases and pests. Insofar as the organic gardeners emphasize the value of organic matter and give valid information supported by proved facts about the true nature of the soil, their influence is all to the good. There is no question that many of the soils of America and in other parts of the world to an even greater degree have become impoverished and unproductive because of depletion of organic matter. Much of our present agricultural practice is aimed at building up organic matter in the soil by the use of cover crops, particularly legumes, and by the rotation of crops in the fields.

Half-truths

A half-truth comes in when it is either stated or implied that the use of composted materials without using chemical fertilizers is enough to build up the organic matter in soils over any large area or to solve the problems of nutrition of crops under present conditions. Over the wide area of the earth's surface where food is produced in quantity there is no possibility of accumulating enough plant refuse to compost in piles and thus increase the organic matter in the soil. In many countries that have been agricultural for many generations, the soil is greatly depleted in organic matter. The most economical and effective way at the present time of immediately increasing crop yields and also increasing organic matter is to use chemical fertilizers which, on these impoverished soils will show immediate results. It can be truthfully said at the present time that without the use of chemical fertilizers even a rich country like the United States would

soon find itself in a position of food shortage.

A statement that is contrary to known evidence is that an element from a chemical fertilizer supplied to a plant and absorbed or combined within it is any different in nutritional value from the same element coming directly from some organic source. Many of the chemical elements in plant tissues were certainly at one time inorganic materials in rocks, which have been released through disintegration of those rocks. Getting evidence of possible differences between calcium or any other element from different sources, organic and inorganic, in a plant is an extremely difficult experimental matter. There are nutrition laboratories that have spent years working on this problem and never has it been possible to demonstrate any differences whatever between chemical elements of organic or inorganic sources in the nutrition of animals.

Another half-truth is that organic gardening will have any direct effect on disease and insect control. It is true that with some diseases a plant that is not growing thriftily may show the effect of disease more than one that is growing rapidly. On the other hand, the exact opposite is true with many diseases, namely the more rapidly the plants grow and the more succulent they are, the more they are attacked by the disease. By leading the gardener to think that control of plant diseases and insect pests can be achieved by organic gardening is contrary to the facts in the matter.

Where the soils are high in organic matter and thus high in fertility plants are thrifty and vigorous. The point is that such vigorous growth is not due to the nature of the chemical elements involved but rather to the presence of organic matter in the soil as

compared with soils which are low in organic matter.

Logic

Probably the most disturbing part of the whole organic gardening movement is that it encourages its advocates to go back to the Middle Ages in their thinking about their problems. Mankind has made great progress through the use of the scientific method in solving its problems and in discarding that of the cult and of the mystic philosophy, at least insofar as it deals with the natural sciences. To deliberately ignore known facts and substitute for them "somebody said or thought they saw" is distinctly a step backward in our attitude toward what constitutes truth. The mystery that is built up around the compost pile is making the whole matter unnecessarily complex.

Home gardeners everywhere should be encouraged to save plant materials and vegetable refuse, if they have a convenient place to do it. Building a compost pile is straight-forward procedure in which any kind of vegetable matter is used. Basically what happens in the compost pile is the rapid decomposition of the plant materials by bacteria which produce decay. In order to make sure that these bacteria are present, it may be advisable to scatter a few shovelful of soil over the compost pile as it is being built. Sods are particularly valuable. To assure the decay organisms adequate nitrogen and other elements for their growth, the addition of chemical fertilizers on each layer is recommended.

Summary

To sum up: we are indebted to the organic gardeners for emphasizing to the gardening public the importance of organic matter in the soil and for pointing out the practicability of composting vegetable refuse in small areas

on the home place. This we can accept with appreciation. On the other hand, encouraging people to believe that their own diseases can be cured by growing foods on organically fertilized soils as against using chemical fertilizers or encouraging people to refrain from using a sensible means of insect and disease control is a distinct disservice. Further, it must be realized that apart from the small garden where refuse can be saved and brought in, the compost pile is wholly inadequate to maintain economically the organic matter in the soil. Perhaps the worst feature of the whole organic gardening movement is that it substitutes the hocus pocus of the cult for sound scientific evidence which in the long-run is the only proved basis for solving our problems.

Excerpts from a Letter by Chas J. Ott

(Chas. Ott is in Alaska and sends some impressions of the country)

"I got to Fairbanks two weeks ago. The Forest Service wanted men to fight a bad forest fire south of here in the Big Delta country so I signed on right away. It was hell for a while—if only the careless camper or smoker who was the cause of the fire could have seen and experienced what his carelessness caused, maybe there would be fewer fires. We finally got it under control thanks to a timely rain a few days ago. The fire had burned over 25 square miles of timber and muskeg.

"It is appalling to see all the burned over country wherever there are roads. It is especially bad in Canada along the Alcan Highway. They sure must be trying to burn up that whole country. Pretty soon they will be able to call that highway the 'Black Highway' for it will go through a country of blackened and charred snags and stumps."



Mt. Rainier—Photos by Joan Parry

Notes on the

WILD AND CULTIVATED GARDENS IN THE PACIFIC NORTHWEST

JOAN PARRY

IN one of last year's issues *The Green Thumb* had as back cover an announcement of William C. Douglas' book *Men and Mountains*. No one, neither the experienced mountaineer nor the flower lover familiar with an alpine or a forest flora, can fail after reading that book to have his imagination lured by the Cascade Mountains of the Pacific Northwest. It is, moreover, country that casts a spell over its own people. You can detect their own close identity with the country around them by their speech, by their way of living, and by what they grow in their gardens.

To the people of western Washington Mount Rainier is more than a mountain: to the country man and the city dweller alike it is the presiding genius, the timeless personality to whom they refer with affection as *The Mountain*. And for the people of western Oregon, Mount Hood has the same significance. As the mountains have a direct influence on their thought, so has the plant material of the forested foothills, of the valleys and the high places, a direct influence on their gardens.

It is well known that the Pacific Northwest possesses one of the most

*Western Azalea along the
driveway of a
Portland Garden*



*A typical Terraced
Woodland Garden
in Portland*

favorable gardening climates of America. It is, perhaps, less well known that there is an abundance of shrubs and wild flowers of great garden value. But the gardeners in the Northwest—and they are many—are conscious of both these advantages, and nowhere have I seen such appreciation and skillful use of native plant material as in the gardens of Portland northward to Seattle.

You cannot fail to notice instantly that these gardeners are fully conscious not only of the reliability of

their own native material, but also of the fact that alien plants introduced from a country with similar climatic conditions will settle down and live harmoniously as friend and not as stranger. And, while they rely on native material for their garden fundamentals, they blend in with them for contrast and variety foreign plants with similar requirements. Asiatic bamboo neighbors the mountain laurel of eastern North America; the wild syringa succeeds the lilac; primulas and polyanthus enjoy the same shade

and filtered sunlight as the ferns and trilliums of the western forest.

It is impossible to name more than a few of the native flowering plants that are found in Northwest Pacific gardens. First there is the immensity of Mount Rainier itself, rising almost from sea level to a height of 14,408 feet and covering at base a hundred square miles. You would find in the forested regions of the lower elevations, in the Canadian zone that lies between 3,000 and 5,000 feet, in the Hudsonian zone and the Arctic-alpine zone, some 700 species of flowering plants, very similar to those you would find if you travelled northward from Puget Sound to within the Arctic Circle. And Mount Rainier is but one mountain. You would find many of the flowers throughout the Cascade Range and the Olympics of the Olympic Peninsula.

Among the greater glories of Oregon are many native iris, two of the most widespread are the blue flag iris that carpets the Oregon valleys in spring and *Iris Douglasiana* that possesses more colors than the rainbow and abounds throughout the coastal region of southern Oregon and Northern California. And in this same coastal region acres and acres of land

are covered with the large pink-flowered California Rose Bay, *Rhododendron californicum*, and with the western azalea,, *R. occidentale* that bears a mass of fragrant creamy white to pink flowers. No hybrid to my mind has surpassed either of these in loveliness or profusion.

You might well wonder what flowers among this galaxy of bloom the gardeners of Oregon and Washington would bring within their gardens. Speaking very broadly of Portland as the representative center of Oregon gardens, and of Seattle as the center of Washington, I would say that both Portland and Seattle gardeners use three evergreen shrubs as the basic semi-permanent garden structure: salal, *Gaultheria shallon*; the Oregon grape, *Mahonia aquifolium* and the evergreen huckleberry, *Vaccinium ovatum*.

Around this trinity of evergreens, all of them inhabitants of the lower forested regions, they build their plant material upwards to the azaleas and rhododendrons, the dogwood and hawthorn and crabapple, and downwards to the ground cover such as Kinnikinnick and pasthendra.

In the woodland type of garden that Portland favors rather more than

Heather-covered Slopes in the Olympics

Heather and Azalea Planting in a Portland Garden



Seattle, you will often meet other forest natives such as bleeding heart, *Dicentra formosa*; the red flowering currant, *Ribes sanguineum*; the Pacific trillium, *Trillium ovatum*; the wild lily-of-the-valley, *Maianthemum dilatatum*; starry Solomon plume, *Smilacina stellata*; and the wood anemone, *Anemone deltoides*. All these, together with such ferns as sword fern, deer and lady fern, and the American maidenhair I have seen in gardens that are home to primula and polyanthus and auricula.

As a very broad generalization I would say that Portland gardeners favor above all, apart from roses, the iris and primulas, and the azaleas and rhododendrons. Among these last it is the native *R. californicum* and *R. occidentale* that have pride of place.

In a sense Seattle gardeners seem more under the influence of the mountains; you will see outcroppings of rock a central feature of many gardens, and rock slopes rather than green terraces for sidewalk boundaries. These are planted mostly with prostrate juniper and yew and other low growing plants and shrubs, and almost unfailingly you will see some heather.

I do not know whether the wide use

of heather was first inspired by some gardener who discovered it does remarkably well here, or whether the so-called red and white heathers, *Phyllodoce empetrifomis* and *Cassiope Mertensiana*, that cover countless acres of mountain slope with a carpet of bloom in mid-August, are the cause. But it is widely and most effectively used in small and large gardens.

By all these I shall remember the gardens of the Pacific Northwest, and above all for the depth and variety of natural green that creates the perfect backdrop for the cultivated annuals and perennials. These range through the pale shades rather than the more brilliant, for the delicate colors do not burn out and fade in this northern climate as they would do further south.

Blue and mauve to palest lavender, rosy-pink and shell pink through to white; these were the colors and half-colors repeated over and over again by annual and perennial delphinium and phlox, by snapdragon, petunia and stock. These pale colors harmonized to perfection with a landscape that has both the blue of sky and water and the soft grey mists of the mountains, and a natural flora that is predominately white and green.

SOME EDIBLE WEEDS

V. O. GRAHAM

Reprinted from "Friends of our Native Landscape"

A FEW edible weeds are found growing on every vacant city lot. It is like hundreds of others if not already taken over by some junior baseball tournament. This chart should assist in finding some of these vegetable miscreants, a surprising number of which could find a place on the dining-room table.

Dandelion (1) is an all too familiar herb used as "greens", and its flowers

for "dandelion wine". Shepherd's-purse (2) so called because of the purse-shaped seed pods. Their mustard flavor takes rank among tasty herbs. Orchard-grass (3) is a forage plant. Climbing False Buckwheat (4), a relative of buckwheat, is a weed that is edible, but this climber will bear further culinary study. Lamb's-quarters, (5) sometimes called "goose-foot" from the shapes of its leaves, is



also among the housewife's cuisine, raw or cooked. Burdock (6) when young is of pleasant flavor becoming bitter with age. But its burs make it an offensive nuisance. Wild, or prickly lettuce (7) is as succulent as garden variety. With the dandelion, lamb's quarters and prickly lettuce may be included curled, or sour-dock (8), in a pot of "greens". Wild, or cow-parsnip (9), is a member of the carrot family. Its edibility is questionable even to cattle. One species was dedicated to Hercules according to Pliny, and was thought to have medicinal value. It is a plant known everywhere as a pernicious weed. Vacant lots, fence rows, woodland margins and old fields are habits of many other so-called weeds. Some one has said "A weed is a useful plant growing out of place." At any rate the chemicals and vitamins stored up in pesti-

ferous weeds go far to replenish the needs of all animal life when *hunger* and *necessity* meet.

Instead of telling people that their blue spruces are "weeds" when they are overgrown, why not tell them to save them until December and give them to their churches or to the City of Denver for Christmas trees? Huh? That's what I plan to do with that little beauty of mine out front when it starts to push the house over about the year 1966.

DAISY HASTINGS.

This bit of information came from one of our readers. The Gypsy Moth was accidentally released in the New England States, some 60 years ago. At that time it could have been completely wiped out for an expenditure of only \$100! In the past sixty years, over 100 million dollars have been spent to fight this pest.

GARDEN TOOLS

"A WORKMAN is known by his tools" is especially true in gardening.

For the average home gardener, the list of gardening tools is small but these few necessary items should be of good quality and appropriate for the work required of them. The essential list would include hand clippers, sprayer, hedge trimmer, edger, lawn mower, rake, cultivator, and shovel. As interest in gardening grows, many additional tools and gadgets can be accumulated.

It is well to have a special place to keep these tools, where they may always be found when wanted and still be protected from the weather. Most gardeners find a special rack in the garage or back porch can easily be arranged. For satisfying workmanship, the tools should be kept in good condition, oiled, sharpened, or adjusted as necessary. Incidentally, this is a good job for stormy days when outdoor work can not be done.

Many good gardeners make a practice of carrying a light pair of clippers in their pockets while they are in the garden so that they may always be able to clip a lopping stem here, cut off a dead seed head there, or train a new tree. This seems to be the one indispensable garden tool which is a symbol of gardening just as are the scissors to a seamstress or hammer to a carpenter.

Perhaps the next most useful tool is a hoe or cultivator to combat the weeds and break the surface crust on soil after watering. Each gardener will develop a preference for a particular kind of tool to fit his needs.

Other gardening tools include a trowel of some kind which is very

useful in handling small plants or working in crowded places. Some will prefer a round-nosed, long-handled shovel for handling soil, while others find the square, short-handled spade more useful. Many gardeners have both. A garden rake may be used for all purposes, but sooner or later most gardeners also accumulate a dandelion rake and a light, bamboo leaf rake. Small hedges may be kept in shape with simple hand shears but larger areas of hedge will make the efficient power clippers now available very much worth while.

Everyone has a lawn, so a good lawn mower is essential. As with hedges, a power model is very efficient if the lawn is extensive. Much of the customary clipping and edging of lawns can be eliminated by proper planting, but grass shears are still a useful tool. Various lawn edgers may save time also. Badly compacted old lawns in heavy soil may be benefited by some kind of spiker or aerator, though usually it is cheaper to rent these tools than own them. Extensive estates may find one of the new power leaf-grinders valuable.

Since we must consider that our insect pests will always be with us, sprayers and dusters are a very essential part of any set of garden tools. For the average small home grounds, the knapsack sprayer will fill all of the requirements. Small hand-sprayers and dusters are valuable in that they are quickly available and an infestation of insects may be easily hit when they are first discovered. If weed killers are to be used, it is absolutely necessary to have a separate sprayer. Insect pests on trees which are taller than head height are most efficiently controlled by the high-

powered spray equipment of commercial tree men.

For one who likes to personally do all trimming necessary, a good pruning saw and long pruner will be necessary.

Larger grounds may profitably use one of the many kinds of new tractors. As with so many other phases of gardening, there are no set rules on when and how to use gardening tools. Personal experience and the experiences of your neighbors are the best guides. You will also find the favorite tools of your gardening neighbors, along with the displays in your seed and garden supply stores a good guide in selecting tools for your own garden. Finally, good tools will not make a good gardener, but they may help immensely.

DIMORPHOTHECA

Dimorphotheca is too much of a mouthful for the lovely little African Daisy or Cape Marigold, but it is good to know its last name in case you can't find it in your seed catalogs listed under either of its more familiar names.

These sturdy little annuals come in a glistening white, salmon, buff, creamy yellow, bright yellow and orange. The white ones look as though they been enameled and the colored ones look varnished.

They come into bloom quickly and bloom freely all summer, making a low spreading plant about a foot tall, with their flowers borne on wiry stems, just right for cutting.

With their gay colors they make an excellent massed effect in a border, or are good in a rock garden or as a foreground planting for shrubs or perennials.

MRS. PAUL L. HASTINGS.

A LITTLE DIFFERENT

Try planting some of your bulbs in clumps this fall—in bouquets as it were, instead of in solid beds or along borders; you will like the change. Avoid, as you would the plague, that narrow transplanting trowel for this almost always leaves air-pockets under your bulbs. To help good drainage use a handful of sand under each bulb.—H. F.

PROPER DIET

Ortloff and Raymore in their "GARDEN MAINTENANCE" write that fertilizer, as we generally speak of it, has no place in the rock garden. Leaf-mold, peat moss or sifted material from the compost pile is usually the strongest diet that rock plants can handle.—H.F.



PLANTS FOR STRIKING EFFECTS

The following list of plants used singly or in masses in appropriate places will add character and interest to any garden.

FLOWERS

Prunus Triloba
Austrian Copper Rose
Chas. Joly Lilac
Flowering Almond
Korean Barberry
Varnish Tree
Hopa Crab
Bechtel Crab
Mallow Marvel
Trumpet Vine
Jackman Clematis
Goldflame Honeysuckle

Pauls Scarlet Cl. Rose
Gruss an Teplitz Rose
Pacific hybrid Delphinium
Tall Liatris
Early 'mums
Pauls Scarlet Hawthorn
Zabell Honeysuckle
Lucie Baltet Lilac
Tamarix
Buddleia Alternifolia
Flowering Quince
Catalpa

Redvein Crab
Colorado Hawthorn
Downy Hawthorn
Virginal Mockorange
Rose Acacia
Thimbleberry
Garland Spirea
Painted Daisies
Lafayette rose (floribunda)
Karen Poulson rose
(floribunda)
Kirsten Poulsen rose

FRUIT

Euonymus
Mountain Ash
Korean Barberry
Dolga Crab
Native Hawthorn
Cockspur Thorn
Late Honeysuckle

Catalpa
Japanese Barberry
Viburnum lantana
Bittersweet Vine
Bush Honeysuckle
Snowberry
Coralberry

Bird Cherry
Honey Locust
Hoptree (ptelea)
Bladder Senna
Buckthorn
Roses
Cotoneaster

SUMMER FOLIAGE

Russian Olive
Purple Plum
Purple Barberry

Leadplant
Redleaf Rose
Buffaloberry

Sea-Buckthorn
Golden Elder
Redsilver Crab

FALL COLOR

Ginnala Maple
Euonymus atropurpurea
Euonymus Alatus
Korean Barberry
Sumac
Englemann Ivy

Hawthorns
Spireas
Viburnums
Cotoneasters
Roses
Dwarf Ninebark

Japanese Barberry
Ptelea
Cottonwood
Maples
Birches
Oaks

WINTER COLOR

Red and Yellow Twig
Dogwood
White Birch
Bluestem Willow

All Evergreens
Meadow rose
Wild Rose
Hall's Honeysuckle Vine

Euonymus radicans
Oregon Grape

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American Linden	Horse Chestnut	Northern Catalpa
Silver Maple	Common Honeylocust	Sugar Maple
Common Hackberry	Siberian Elm	Sycamore
Green Ash	Native Cottonwood	Norway Maple
Bur Oak	Black Walnut	Schwedler Maple
Kentucky Coffeetree	Red Oak	European Linden

SMALLER SCALE TREES FOR IRRIGATED AREAS

Russianolive	Goldenraintree	Native Shrub Maples
European Mountainash	Japanese Pagodatree	European Shrub Maples
Buckeye	Dolga Crabapple	Native Alder
Hopa Crabapple	Littleleaf Linden	Chinese Catalpa
Downy Hawthorn	Japanese Tree Lilac	

TREES FOR ALTITUDES OF 7,000 TO 9,000 FEET

Narrowleaf Poplar	Siberian Elm	Green Ash
Plains Poplar	White Willow	Bigtooth Aspen
Balsam Poplar	Common Hackberry	Golden Willow
Smoothbark Poplar	Soft Maple	Russianolive
Quaking Aspen	Russian Willow	Dolgo Crab
Boxelder	Honeylocust	Hopa Crab

TREES FOR PLAINS AND ALKALINE CONDITIONS

Native Cottonwood	Russianolive	Mulberry, in southern part
Siberian Elm	Green Ash	Sycamore, in southern part
Honeylocust	Poplars	
Hackberry	Willows	

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THE ACONITES

There are two kinds of Monkshood, the blue and the yellow but the blue is the more beautiful. If you are a beginner, the best kinds are *Fisheri*, *Nappellus* and *Wilsonii*. Unless they are well protected, the tall varieties will need staking, for their stems are brittle.—H. F.

NEW EARTH CHARTER

Reprinted from "Trees and the New Earth," published by Men of the Trees, Weymouth, Dorset, England.

We submit that without fair play to earth we cannot live physically; without fair play to neighbor, we cannot live socially; without fair play to better self, we cannot live individu-ally.

We believe in the development of a fuller understanding of the true relationship between all forms of life in an endeavor to achieve a natural balance between minerals, vegetation, animals and mankind. Man being primarily dependent on the vegetation of the earth for both food and clothing. In order to get food, clothes and shelter to enable us to live our bodily life on this earth we must take care of the earth and, especially, not meddle wantonly with the natural circulation of water, which meddling has been the cause of great loss of soil all over the globe, and we must rightly return to earth the waste of whatever we take from the earth.

We submit that water must be a basic consideration in all our national and earth-wide forest programs; streams and rivers must be restored to their natural motion, and floods and droughts must be eliminated. Forests and woodlands are intimately linked with biological, social and spiritual well-being. The minimum tree cover for safety is one-third of total land area. Every catchment area should have at least this proportion of tree cover, made up of mixed species, including broad leaf trees.

We believe in the traditional ideal that our fields should be "fields of the woods", by which is meant landscape farming of every valley and plain, with woodlands in high places, shelter belts, orchards of mixed species and hedgrows everywhere.



GARDENS OF COLORADO

A garden-minded tourist going to England can get a handy and neat guide to the best gardens of Great Britain. It is a great help, even if many gardens are open only at certain days and hours, which may not work in well with one's travel plans.

A number of years ago the Colorado Federation of Garden Clubs got out a leaflet called "Gardens of Colorado, Cultivated and Wild". It was an attempt to list some of the worthwhile gardens of our state, not only in Denver, but in Arvada, Boulder, Carbondale, Colorado Springs and many others. It was a big help.

Now there are a great many more good gardens, but no list. Perhaps our members in various parts of this region could be of service in this matter by reporting to Horticulture House what they think are the best gardens in Denver and in various towns.

Gardens listed the last few years

for the St. Anne's tours come to mind, the Look and Learn Gardens are good material. Some of us have pictures of gardens in other towns, the *Green Thumb* has been running other pictures. Local landscape architects know of successful grounds they have produced or helped to produce. Garden clubs are familiar with attractive gardens of members. And so it goes.

Who will help? If a list of representative, good gardens is assembled in this manner, the Colorado Forestry and Horticulture Association might well publish a Colorado Garden Handbook, to be on sale in many places. It would be a self-liquidating expense to begin with, a source of income as the need became more evident.

And, incidentally, it would give the lie to a statement made in 1924 in "Beautiful Gardens in America": "While in Colorado gardens are increasing in number, this part of the country, as a rule, is not in its nature open to the cultivation of gardens".

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ARBORISTS, TOOT YOUR OWN HORN

By DR. RAY R. HIRT

New York State College of Forestry

(From Arborist's News)

LESS than a year ago I heard Norman Armstrong remark that no one could make a living any more, just doing tree work; he simply had to do additional things. I suspect that some exaggeration may have entered into Armstrong's remark; nevertheless, there is a real point of concern in his statement.

In certain cities I have observed several developments that have introduced recently new competition for arborists. The competition itself is not the most serious result in my opinion, but rather the effect upon the attitude of the public toward the work of the arborist.

For years in our home city we have had a multitude of so-called arborists whose work has not been too intelligently conducted. That is probably a common situation elsewhere. A few of us have worked hard to inform the public about the need for experienced, trained workers to care for trees, and I think we have improved the situation slightly. We do have several companies operating in our city that are well qualified, and we take occasion to recommend them whenever possible.

Due to the extensive building program throughout the country and the abundance of dollars—cheap though they may be—plus a renewed interest in gardening and general landscaping, quite a number of plant sales companies have sprung up. Unfortunately a number do not stick to the sale of plants but encroach upon the field of arboriculture, the landscape architect, and other related arts and professions. The process is something like this.

A person buys some planting stock at wholesale and retails it at considerable profit from a stand. Because of such success, the next season he rents (or buys) a vacant lot, adds annuals, perennials, shrubs, small trees, fertilizers, topsoil, fungicides and insecticides, and he may have a profitable business for a season of about 8 months of the year. The following year, if he lasts that long, he hires a delivery truck, finally agrees to plant the live materials and probably suggests a planting plan. Now he is not only a retailer but a landscape artist as well—in his own opinion. Gradually he handles larger and larger shrubs and trees, adds new equipment and men. Since he plants trees he feels that he knows all about them. He proceeds to advise about them and eventually takes over their care. Almost overnight he has become a tree expert, too—or so the sign says at his place of business. And believe me he knows the value of advertising.

Almost invariably such workers do more harm than good to the practice of tree care, especially those who lack the foresight to employ an arborist on their staff of workers. But it is just such competition that many arborists have to meet, and at the same time build up the good will of clients who have had unhappy experiences with unscrupulous tree workers.

The public simply has not been educated to the point where they realize that expert tree care requires the practitioner have a background of proper training and experience. Why is the public so poorly in-

formed? And what can we do about it? As individuals, at least everyone of us can help to remedy the situation. One way, at least to some degree, is to stress membership in some arborist organization, carefully screen requests for membership, and let the public know about these organizations.

Perhaps I should not be concerned about this phase of the arborist's life since I derive my living, such as it is, as a professor. But I happen to teach about diseases of trees in particular and woody plants in general. I know that where you are dealing with sick tissues, with sick plants, and with sick animals, a certain amount of experience, skill, understanding, and education is essential if their condition is to be improved through artificial means. I know that there is something of the artist in the individual who can visualize a beautiful landscape or beautiful vista, and who

has the skill to plant, thin, prune, etc., to bring this about. I know that an untrained, inexperienced man moves a costly tree in the *hope* that it will survive, but you move it with an *assurance* that it will grow. If the public knew these things they would be more inclined to seek the services of the expert, not to hunt for a "bargain" in tree care.

It is up to you to blow your own horn!

THIS SIDE UP

Be sure to plant bulbs right-side-up; most spring-blooming kinds have a pointed top and a kind of ring at the bottom, where the roots were attached. Lily bulbs have scales pointing toward the top and should be tilted slightly so that water will not lodge in the scales and cause them to rot. The bottom of a crocus bulb is slightly depressed—H.F.

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WHAT CAUSED THE WINTERKILL LAST YEAR?

We asked the opinion of the leading nurserymen in the area. They were practically unanimous in stating that they believed that the sudden drop in temperature on the night of Nov. 9, 1950 was the principal cause.

The condition of the plants at this time determined the extent of the damage. Climbing roses were the first to show damage, then as spring came along Chinese Elm, Spirea and Privet were conspicuous for dead wood. Later small fruit trees and cherries began to dry up and all summer larger apple trees died from the effects of this freeze. Many other plants showed some damage.

Most explain it by saying that those plants which were growing yet and had a full sap flow were damaged and those which were thoroughly ripened were not hurt. Newly transplanted woody plants generally escaped damage, for the transplanting had so stopped the sap flow that they were not frozen.

Strangely those plants which are generally considered "tender" did not have as much damage as usual, for our usual winterkill is caused by the hot sun and dry air rather than cold.



Those good gardeners who had held off the water a little previous to this freeze and had their plants thoroughly ripened up had the least damage. It is good practice *any* year to dry up and ripen things a little before time of frost and then soak thoroughly *after* the plants are dormant (have dropped their leaves.)

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NOVEMBER GARDENING

WHILE the rush of gardening may be over for the season, and the time of harvest may be here, the good gardener always finds something worthwhile to do.

As all gardening begins with the soil, so now that the active growing season is over, we can first of all work towards improving our soil. Where the annual flowers or vegetables were, the soil can be spaded up, working in good amounts of manure, peat or compost. If the soil is especially alkaline, attention should be given to improving the drainage through the deep addition of humus. That spot of lawn that has always been inclined to become brown in hot weather might be dug up and the soil replaced or improved and made ready to seed next spring.

Next to soil, in importance to gardeners, is water. Those who develop an instinct for good soil and proper watering have gone a long ways towards acquiring a Green Thumb. The most important consideration now is to be sure that everything goes into the winter WET. Soak everything long enough that the moisture will get down to the farthest roots. With lawns this may be but six inches but large trees may have roots down six feet or more. In heavy soil this may require days of soaking. If the weather remains open and warm for several weeks after this soaking it may require another before freezing weather.

Garden Artilleryman



Good gardeners are learning to pay more attention to mulching and less to cultivation. This is Nature's way and is especially important in fall when the leaves naturally fall and cover the ground. Mulching will help to keep the surface of the soil at a uniform moisture, temperature and texture. It will help to hold water and, as it decays, will furnish plant food.

Tender plants should be shaded or covered to prevent our hot winter sun and dry air from drying them out. Hill tender roses with soil to a height of about 6 inches. Do this as late as possible as roses hold their leaves quite late in the season. It is usually better to bring in soil for this purpose and take it out again in spring. Some benefit may be derived from partially shading climbing roses. Tender-barked trees like Mountainash, Linden or Hard Maple should be wrapped for the first few winters. Evergreens like White Pine, White Fir and Arborvitae should be shaded with lath, burlap or some similar material. Many tender or borderline plants can be grown here if they are carefully mulched, watered and shaded.

Much trimming can be done now, for the leaves are off and it is easier to see what needs to be done. Trees may be given a complete going over, but don't do any more than emergency work on the flowering shrubs, unless you are willing to forgo some of the next spring's bloom. Dead wood can be taken out wherever found. Some do not like to cut Maple, Birch or Walnut when out of leaf as they are inclined to bleed excessively at this time.

The gardener's theme for this month should probably be "Clean up" Take out the dead perennial stems, rake up the excess leaves, hide the rubbish, give a final trim to the hedges and put things in order for winter.

During the summer round of watering and cultivating, spraying and weeding, there was little time for necessary repairs. Now is the time to fix that squeaky hinge, level up that flagstone and paint the fence. This is a good time to start work on that new platform, set of steps or little green house.

Many gardeners find much pleasure in making things attractive for the birds over winter. If you start this, keep it up, for birds learn to expect food and shelter when they have once found it. Suet in the trees, seed in a hanging feeder, and a corn shock for the ground birds will attract many interesting and beautiful kinds. What you do about the sparrows, magpies and squirrels is your problem.

Every good gardener is continually running into things that they wish they knew more about. How to identify the grasses, what constitutes good fertilizer, what the new varieties of 'mums are, or why do leaves turn yellow. Now is the time to get a few books on subjects that especially interest you and study them. If a few other kindred souls can be collected to also study some subject of mutual interest it makes it more fun. The extension departments of the Universities offer good courses as requested, books may be borrowed from the library at Horticulture House and special courses may be arranged in your community or at Horticulture House. The more you know about gardening the more pleasure it is.





December, 1951

The Green Thumb

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The Green Thumb

Vol. 8

DECEMBER, 1951

No. 12

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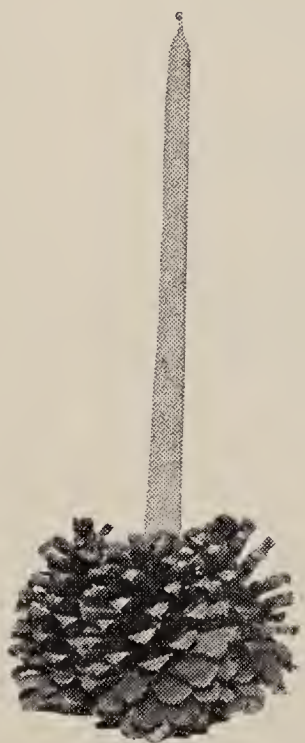
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DECEMBER SCHEDULE

Dec. 2, Sun. Leave Horticulture House at 7:30 a.m. Trip to see the Bighorn Sheep in the Tarryall Mountains. Driving distance about 250 miles. Inquire for further details.

Dec. 6, 10 a.m. Mrs. Edward Mixa of Boulder will be at Horticulture House to give a repeat performance on Christmas decorations for your home. All who saw Mrs. Mixa's delightful creations last year are agreed that Christmas wouldn't be well started without one of her demonstrations. This program is offered in the morning so that more homemakers may attend.

ROCKY MOUNTAIN
HORTICULTURAL
CONFERENCE

The date this time will be a little later than usual; the 25th and 26th of March. The place will be the Civic Center building of Denver University as last year. The program we hope will be better than ever. Mark the date and plan to attend.

The annual dinner of the Association will not be held in connection with the conference as usual, but will be held on January 24th as announced in the next column.

SAVE 50c

As a special inducement for gardeners who would like to have the Green Thumb magazine and also George Kelly's new garden book, Rocky Mountain Horiculture Is Different, we are offering a year's membership in the Colorado Forestry and Horticulture Assn., which includes a year's subscription to the Green Thumb, and a copy of the book for \$4.00. This is at a saving to you of 50c.

ANNUAL DINNER

On account of the Rocky Mountain Horticultural Conference being held in March this coming year, the Annual Banquet and Meeting of this Association will be held in January. The date will be the 24th and the place the new Auditorium of the A.A.U.W. at 14th and Josephine. The dinner will be good, the election of directors and necessary reports will be held to a minimum. The year's work of the Association will be told in ektachrome slides taken by George W. Kelly during the year. These will include some of the most fantastic examples of rock and wood sculpturing by Nature that have ever been shown.

Come and enjoy the food, the remarkable pictures, the music and the fellowship of the finest group of people in the state.

LITTLE PLANTS THAT LIKE OUR GARDENS

BY MAUD F. MCCORMICK

FOR edging the perennial border as well as for use in the rock garden, there are many attractive little plants that are not exacting as to their requirements and remain neat and healthy year after year. Recently I have been particularly interested in a few such plants especially adapted to hot, dry conditions in rather poor, sandy soil.

Among such plants, perhaps the Perennial Candytuft, *Iberis sempervirens*, is best known as a healthy, frequently evergreen spreader with a wealth of white flowers in May. Really a sub-shrub without enemies or diseases to combat, it needs only casual treatment to perform well in the rock garden or as a formal edging for the perennial border. Practically the same statements can be made for the little Woolly Speedwell, *Veronica incana*, whose dwarf gray mats of foliage rarely become unsightly at any season of the year. Of course, neither it nor the candytuft can always take without flinching such weather as our variable climate sometimes confers upon them. Last winter left browned tips on the leaves of both.

For the hottest and driest locations and in the poorest of sandy soils, I have found nothing to succeed so well as does the *Helianthemum*, known familiarly as the Rockrose or the Sunrose. This plant is a more or less evergreen sub-shrub, too. It makes neat mats of foliage which are covered during all the early summer with fairy wild roses of white, pink, or

even red. Shearing the plant keeps it in the size and shape the gardener prefers, and, some say, lengthens the blooming season. Letting it grow as it wishes allows it to cover walls and ledges with its pleasing green trailing sprays. It grows readily but not speedily from seed, and green cuttings from choice plants soon root and perpetuate the color desired.

Many other plants come to mind, including the Hardy Alyssum, the Arabis, Aubrietias, neat little Alpine Pinks, and the omnipresent Creeping Phlox. But there is one little plant that has been an ever-increasing joy to me and I do not find as widely used as it should be. It bears considerable resemblance to the wild geranium with small, delicately-lobed leaves and trailing stems, but *Geranium lancastriense* is a tidier plant. It is a variety of the taller *G. sanguineum* and gets its name from the part of England where it was first grown. For the past five years I have been watching it develop under a poplar tree in a rather dry, sunny location. It is now a mat 18 inches across and 6½ inches high. Its tiny, delicately-cut leaves are only an inch across and are a lovely, lacy green from spring until fall. For a greater part of the summer the plant is studded with pale pink bloom. Now, in late autumn, the leaves turn to a rich wine-red. The plant is offered by some rock-garden specialists, but I do not find it used as widely as it should be here, where our climatic conditions seem to meet its unqualified approval.

In the wilderness we may enjoy our beauty as it is without effort, but when we have destroyed the balance of nature with our civilized ways, we must work for what beauty we can get.

GROWING IN METAL PLANTERS.

BY MARY K. HELLER

POPULAR, and growing ever more popular, are the attractive plant containers of the various metals—brass, copper, tin and wrought iron. This is not surprising, because they are available in so many different types, shapes and sizes that the grower can find such a planter that is just right for any spot in the home, and the bright and shiny metals or colored painted exteriors can be made to spice up a dull spot in a room.

There has, however, been some difficulty reported by users of such planters due to corrosion of the metal and in some cases the opening of the seams of the square-cornered types. Both are due to the chemical reaction of the metal—the basic metal of the container and the metal sealing ingredient—with the nutrient elements in the soil, whether organic or inorganic plant food has been used or not. All soil has certain amounts of these chemicals in it—the more nearly “perfect” the soil, the more of these elements are present. But, even if one could start a plant with this so-called perfect soil, he would soon have to use some kind of plant food in order to replace those nutrients used by the plants in the process of growing.

These difficulties can be avoided by the very simple expedient of lining all metal planters with a coat of lacquer or any kind of water-resistant paint. Acid-resisting asphalt paint is excellent for this purpose. A clear lacquer is used by many manufacturers on all

such products, and recoating is not necessary if the interior was painted at the time of manufacture. But, being certain that all such containers are painted inside, high enough to come to the top of the soil line, will prevent any corrosion or opening of the seams.

Many such planters have no provision for drainage in the bottom and often growers find it hard to know how much water to give the plants, with the result that they are either too wet or too dry. A good planting plan is to put coarse gravel, or something of the sort, to at least one-fourth or one-third the depth of the pot in the bottom, and a layer of peat moss over this for water retention. Then, fill with soil. Excess water will collect in the gravel, forming a little reservoir from which the moss and soil will take it up as they dry out, and there will be no trouble with chlorosis from soggy soil and no root rot from the same cause. Thus is developed a form of sub-irrigation on a very small scale. Just as the water will become a reserve supply in the gravel, the plant foods which are regularly added will not be lost by being washed out through the bottom, but will be retained in the gravel and gradually taken up by the roots, which will eventually grow down into the gravel. Even if they do, however, root rot will not develop, but all types of plants will thrive and do an excellent job of beautifying the home.

PLAN. With the successes and failures of the past season fresh in your mind start now to plan for needed additions and improvements for next season. And put these ideas down on paper so that you will not forget them when spring comes around. Planning in itself is part of the pleasure of gardening. We must have the vision in our mind before we can have it in fact.

YOU CAN GROW ROSES

BY VELLA HOOD CONRAD

LET'S talk about roses — growing them successfully in the Rocky Mountain Area. Any soil that will grow good vegetables will grow good roses, but they do prefer a heavier soil, and good drainage is essential.

George Kelly has a chapter in his book *ROCKY MOUNTAIN HORTICULTURE IS DIFFERENT* on "Let's Begin with the Soil". You will gain some timely advice here. It's advice that will enable you to better understand soils and the conditions we garden under here.

Choose a spot with at least a half day of full sun, away from competing roots of trees and shrubs. I like roses in beds alone, spaced, for hybrid teas, at least two feet apart, and beds not deeper than six feet.

There are many classifications of roses and each has its place and purpose. Hybrid teas seem to be the favorite with Floribundas coming into their own. Shrub roses, climbing roses, miniatures—you will want to grow them all.

This past year was truly a challenge to any gardener. November 1950, we had a severe freeze, preceded and followed by mild weather, then a belated, temperamental spring with snow June 1st. This season was comprised of exactly 3 months and twenty days between snows. We had in our locality devastating hail June 9th. Despite it all, we grew roses—beautiful roses.

To those of you starting a new rose garden I would enumerate four basic combination rules:

1. Select stock.
2. Soil preparation and proper planting.
3. Care and maintenance.
4. Winter protection and pruning.

Never sacrifice quality for quantity in selecting rose plants. Fewer good roses are a much better investment. Buy, if possible, field grown roses of No. 1 grade. They should have at least two to three sturdy stems and good roots. They will vary according to the variety. These are usually all pruned and ready for proper planting. Any broken roots should be clipped clean.

I like to get rose beds prepared in the fall. We have sandy soil and at this time it is easier to add the needed elements and spade deeply. Our soil requires humus and peatmoss and on a fall prepared bed I use well-rotted cow manure—ratio of about 1 bushel of manure to 10 bushels of soil. This is spaded in with humus and peat to a depth of at least 18 inches. I do not rake it down but leave the furrows to gather winter moisture.

In a spring prepared bed I do not spade in the cow manure. Roses seem to appreciate fertilizer mulches on the ground about them, but they resent it near their roots. That is why bonemeal is safest for roses. It does not burn and while it takes longer to get results, I like it best. I still spade deeply, adding humus and peat. Rake and level the bed, then plant the roses. Add bonemeal when planting, mound them up, and use a manure mulch of 2 parts peat to 1 part well-rotted cow manure.

Plant roses here in the spring as early as March if you can. Roses need a hole large enough to accommodate the root spread, and loose dirt in the bottom of the hole, mounded in the center on which to set the roots. Place them so that the bud union will be 1 to 2 inches below the ground level. I push all the loose dirt I can in around the roots, filling the hole about two-

thirds full. Then I water with the open end of the hose, slowly, to firm the soil and eliminate air pockets. I move the plant a little to assure its firmness and check to see that the bud union is correctly set.

When planting a bed of roses, I go on to the next rose at this point, following the same procedure. By the time I get back to the first one the water has drained and I can fill in the hole. This is where I use bonemeal on the spring prepared bed—1 cup to each plant—mixed with the remaining soil I dug from the hole. I fill it in to ground level and mound up about 6 inches over all with plain soil and apply a manure mulch around and between mounds.

Soon the stems are green and leaf buds swell. Now is the time to gently remove the mound, raking the soil into the manure mulch. On established beds this is the time we prune, weed and cultivate. Also, I dig a shallow trench around each rose about six inches away from the stems and apply 1 cup bonemeal to each plant. Then I water thoroughly. A few days later all this is raked down level again and our peat mulch is added to a depth of about 2 inches.

The roses really start growing now. Get together the materials to care for them. The care and maintenance is no doubt the most important step. Good stock, properly planted eliminates many maintenance problems.

Bugs love roses and weather conditions often encourages mildew and other fungus diseases. We follow a regular weekly program of spraying with Black Leaf 40, and a thorough dusting each ten days with a combination sulfur dust. Black Leaf 40 controls aphids and the dust controls fungi and many other troubles.

We water once a week, but we water thoroughly. Our garden requires very little cultivation. The peat

mulch gets the credit for fewer weeds and moisture retention.

Normally, we have continuous bloom from June until October 1st, with at least 3 periods of solid profusion in bloom. We cut blooms for all purposes and we try to keep all faded blooms cut. To insure more bloom we cut so that there are at least two leaves of five leaflets each left on a stem. We feed another cup per plant of bonemeal in July; add more peat if needed. I do not like to feed roses later than August 10. Fall starts a few weeks later and the strength is better in roots than new growth now. Your roses will still bloom, however, and their colors will be even more vivid in fall.

We keep right on dusting and spraying until Jack Frost hits hard, but we do not water as often. We clean up all rose foliage as it falls and burn it. This is one precaution against spreading black spot. Early snows may damage the canes. We clip these below the break. Our roses are so persistent—so faithful, but in October we are thinking of their winter protection.

Before the ground freezes, we cut only the extra long cane tops back to about 18 inches. We take good garden soil and mound up around each rose to a depth of at least six inches. This dirt has to be brought in from another part of our garden and is always choice soil. We give our roses their final watering and not until it freezes do we add additional mulch. We save our Christmas trees and beg those of all our friends. We have found the boughs from these ideal. They help prevent that alternate thawing and freezing. They do not smother plants and are easily removed in spring. Placed neatly they are very attractive.

In March, we remove the boughs and start looking forward to uncover-

ing. We see a few green canes—a swelling bud or so. We can hardly wait for weather and soil conditions to permit our starting all over again.

It is spring and a busy time, but this is when we prune. Again we remove carefully the mounds of earth. We cut back to live wood leaving four to six strong canes. We cut out all dead wood and scrawny canes. Pruning is very simple in this area.

We have talked about good stock,

soil preparation and proper planting, care and maintenance, winter protection and pruning. Those are the basic rules. They may sound complicated—in reality they aren't. However, I will not tell you roses do not require work and care. They do.

Roses will, of all flowers, respond to love. If you are a true rosarian, you love roses. The care you give will be loving care. The return will be always, "lovely roses".

YOU CAN GROW STRAWBERRIES

BY CLAIR ROBINSON

MR. and Mrs. Hugh Brown, 3215 Fenton St., Lakewood, Colorado are having good success raising strawberries. A great many people are asking for a good sound practical method for their own gardens, so Mrs. Brown kindly gave me permission to make these notes on her culture of strawberries.

The Browns are growing the variety, Minnesota 1166 and find after four years experience with this variety, it gives them plenty of berries to preserve, can, freeze and furnishes berries for use fresh at all times during the growing season. This is an ever-bearing sort with few runners. Plants are compact, upright growing and the fruit is borne upright on stiff stems. This feature keeps the fruit off the ground giving all clean, sound berries.

For the strawberry beds choose a spot in full sun with good drainage. Cover this area with a four inch mixture of cow-manure and peatmoss, half of each, then spade soil and fertilizer 16 inches deep in either spring or fall. Make a ridge of the soil one foot high and 18 inches wide, with rows 30 inches apart and plants set 12 inches apart on top of the ridge, firming soil well around the plants, and be sure soil in ridge has been well firmed.

If planting in spring, do this as

near the first of April as weather will permit. Water by making a dam at each end of trench and with the nozzle removed and force turned down to one-half, fill the trench level full. If no rain falls, do this once each week all summer and fall. Avoid overhead watering. In early fall, more cow manure and peat can be put in the trench, worked into the soil and well watered. Mrs. Brown's reason for using the peat mixture is the moisture retaining property of peat and it also keeps the straight manure from burning the young plants.

When the bed is established, fertilize heavy once a year using the same mixture either in spring or late fall. Be sure the bed is well soaked before freezing weather in late fall. The first of December cover the bed with corn stalks, leaves with a good amount of broken twigs in them or any coarse material that will not pack with the winter snow and rain as grass is apt to do. Mrs. Brown has used the dried vines of petunias with good success. If the winter is dry it is good insurance to water on a warm day.

A strawberry bed is good for only three years and by that time you should have a new one coming on in another location. Use only young plants when starting a new bed.

WATERING AND IRRIGATING

ARE among the oldest "Helping Hands" to Mother Nature and their use is over 5,000 years old. It has been made necessary to overcome deficient rain or snow fall, and to produce more and better food for human and animal. Also it produces surer and more abundant crops, and in doing so gives a better standard of living to many more farmers and gardeners; and last, but not least, it has given us our beautiful cities, towns, parks, cemeteries and home grounds which would, without irrigation, sure be a sorry looking lot.

WHY AND HOW TO WATER

—Since plants in our Plant Kingdom are not provided with teeth or stomach to eat and digest solids, they must obtain all plant food (except what they obtain through the leaves) in a liquid form, including 17 minerals, which have to be liquified by water, erosion, frost, heat, chemically, decomposing, micro-organisms, air, etc.

Feeder roots have very microscopic small openings. By irrigation we force air into the soil, and the deeper we force water and air into the otherwise lifeless subsoil, the more wealth of raw mineral and plant food is made available for plant roots.

Where the water table is high (like the San Luis Valley, South, Middle and North Parks) deep penetration of irrigation is not necessary; but it is advisable to penetrate to moist subsoil if possible; then deep rooted trees shrubs, alfalfa, etc., will need very little irrigation and not very often. Pre-water deeply before planting anything.

WHEN TO IRRIGATE OR WATER—Before planting anything water thoroughly to find high and low places, especially fills and back fills. For trees and shrubs to be planted, fill previously deep dug holes several

times with water before planting. Highway planting done this way would assure sure growth and very little after maintenance.

After lawns are established (if properly pre-watered before planting, assuring deep root system) water lawn only once every 8-10 days, cutting twice a week; leaving clippings on lawn.

Penetrate water 12-24 inches deep; which takes about 2 to 3 inches of water. Of this only $\frac{1}{4}$ to $\frac{1}{2}$ inch will evaporate; whereas if you water $\frac{1}{2}$ inch daily the penetration will be about 2 inches; and you will lose $\frac{1}{4}$ inch in 8 hours. In 10 days you will have put 5 inches of water on lawn, hardly ever touching the lower root system.

The moral is to put 3 inches of water deep into soil every 10 days and make plant food available and save time and save the Water Boards valuable water.

Stop sending half of your irrigation water to Kansas and other states per Trade Winds by evaporation; put it in the soil—China has no Pet Cocks to drain the deep water. Withhold watering some in early fall to assure maturing. Water only when plants need water. You can tell when by the color of leaves for they will get darker when dry. If possible, water during winter months as plants very seldom winter kill by freezing, its the sun and drought that kills.

Also, plants store food in winter and develop roots below frost line. Keep the top of the soil wet in winter and dry in spring and summer. Dry soil on top is 30 degrees warmer than wet soil. It takes warmth and sunshine to start life anew, besides it takes soil, minerals, molds, micro-organisms, water and air.

HENRY GESTEFIELD.



TIME FOR ACTION

SINCE the reorganization of this Association some 7 years ago we have periodically talked about the importance of preserving the remnants of a unique grove of Pinion Pine trees north of Fort Collins along the Laramie road.

This grove is unique in that it is far beyond the natural range of Pinion trees. It was originally about half a mile wide east and west and about three miles long north and south extending largely on the east side of a hogback formation. This formation is capped in most places with a strata of good limerock varying from two to eight or more feet thick. Scattered trees are growing for miles from this area but the largest trees and densest groves are on this limestone formation.

For some years this limestone has been quarried to be used by the Sugar Companies in their refining processes. There have been roads, a rail spur and loading facilities built to facilitate the handling of this heavy material. The first thing done is to bulldoze off the trees, then blast out the rock and load it. Of course what is left is nothing but desolation with no chance of its ever again growing anything or being more than a jumble of broken rock and unused roads.

The section where the work is now going on is State School land administered by the State Land Board. They receive a large sum per acre foot for this stone which helps greatly to support our schools. This Land Board are, after all, servants of the people and if they feel that enough people prefer this area to be left as a unique botanical reserve and state park rather than have it as a source of income they will so designate it.

Since about two thirds of this section from the south has had some work done on it we are recommending that the State Land Board designate a line at the farthest north workings and indicate that no work will be done north of this line. This will allow the quarrying people to clean up all available stone up to this point and make full use of their existing installations. This might take them 10-20 years. Then there would be left an area approximately a half mile square where some of the best specimens are located which could be added to by private lands adjoining and leave a presentable sample of the original grove.

We must see that the bill establishing a state park system in Colorado is put through the next legislature so that there will be a suitable agency created to administer this as a state park along with many other such unique areas over the state.

Residents of the vicinity have finally become concerned about the loss of this grove and are taking an active part in calling everyone's attention to its importance. The Livermore Women's Club and various groups of Fort Collins are helping to give the situation general publicity.

If you feel that this grove should be preserved you should tell your public officials about it.

TREES AND SAFETY

BY GEORGE S. STADLER

OURS is a constantly changing way of life effecting countless hazards proportionate to modern conditions. Regulation, capacity for realization and a humane consideration of one another, serves constantly as protection from the ever present dangers to human life and property.

Roots required for substance and support of a tree can effect damage to surface walks, pavement, curbs and walls, as well as to essential underground pipeline and conduit facilities. Weak, poor, ineffectual root systems damaged by either man or natural action result in poorly supported tree growth subject to wind throw.

Tree trunks necessary to support of the crown and conduction of nutrient material will continue to expand in size until maturity or death causes growth to discontinue. Trunk structures on large trees along streets can render visibility obstructions to both traffic and pedestrians. Damage or wounds neglected on this portion of a

tree can allow entrance of rot fungi which may weaken it to the extent of causing it to crash under stress of storm or wind.

Then too, the crown of the tree, necessary for manufacturing of food and growth materials, transpiration and evaporation processes, is a constant source of danger potential if neglected, allowing dead, weak, or out of proportion growth to develop in jeopardy of everything below. Obstructing foliage can conceal signs, lights or signals required for human safety, or safe vision. Limbs interfering with electrical power lines will cause short circuits dangerous to human life and adjacent property.

Common sense safety precautions applied in planting the right type of tree in the right place, and maintaining it over the years in a proper manner, will serve to overcome the danger factors of tree growth to human existence within heavily populated areas.

NEW HARDY EVERGREENS FOR COLORADO

BY ROBERT E. MORE

ACCURATELY speaking there are very few hardy evergreens that are "new" in Colorado. Inquisitive, pioneer nurserymen like George Kelly, Scott and Charlie Wilmore, Maurice Marshall, Robert Forrest, John Roberts, Bill Lucking and many others—between them tried about everything that could possibly succeed here. My only contribution has been to try more of a kind, for a longer time, under more diverse conditions than perhaps the others did. It takes so long to be sure, that the list of new, *hardy* evergreens is still rather short. I believe, however, that the following, not all of which are as yet carried regularly as routine stock, are all pretty certain to stand up under conditions even as severe as November 10, 1950, when the thermometer dropped from 50° above to 8° below in 48 hours and, of course, before very many of our woody plants had "seasoned."

LARGE EVERGREENS (above 30 feet).

Pinus contorta—Shore Pine. Very picturesque tree with twisting trunk; the Pacific Coast cousin of our Lodgepole Pine.

Pinus flexilis Glenmore—Glenmore Limber Pine. A selected native with longer and more silvery needles.

Abies lasiocarpa arizonica—Corkbark Fir. As blue as a Moerheim Spruce and as soft as a White Pine.

MEDIUM EVERGREENS — (15 to 30 feet).

Pinus cembra—Swiss Stone Pine. Symmetrical as a trimmed juniper. Not to be placed in southern or western exposures.

Pinus sylvestris Pyramidal—Pyra-

midal Scotch Pine. A narrow column for all year accent.

Juniperus scopulorum Gray Gleam—Gray Gleam Rocky Mountain Juniper. Scott Wilmore's patented tree. The finest juniper of all. (But don't get any juniper unless you are willing to have it sprayed twice a year.)

LOW EVERGREENS (2 to 6 feet).

Juniperus chinensis Blue Pfitzer—Blue Pfitzer Juniper. Fast growing, handsome, a novelty.

Juniperus scopulorum Table Top—Table Top Rocky Mountain Juniper. A spreading native of fine color. (The varieties "Park" and "Communis Type" are equally as good.)

Picea glauca Albertiana Dwarf—Dwarf Alberta Spruce. A gem to be planted in a northern exposure only.

Taxus cuspidata nana—Dwarf Japanese Yew. Plant in all year shade and feed each spring.

CREeping EVERGREENS (Under 2 feet).

Juniperus horizontalis Glenmore—Glenmore Creeping Juniper. The hardiest and slowest growing of all. A selected type with berries of Wyoming Creeping Juniper.

Juniperus horizontalis Black Hills—Black Hills Creeping Juniper. Faster growing but completely hardy. A product of Marshall Nurseries.

Juniperus sabina Russian No. 4—Russian Savin Juniper No. 4. An offering of D. Hill Nursery that "has everything."

Juniperus procumbens nana—Dwarf Japgarden Juniper. Another Hill product. Try it.

HOW TO CARE FOR YOUR CHRISTMAS POINSETTIA

BY HELEN MARSH ZEINER

HOLIDAY seasons bring holiday flowers, and Christmas brings that bright and cheery favorite, the poinsettia. A native of moist, shaded parts of tropical Mexico and Central America where it grows as a shrub 2-10' high, the beautiful poinsettia (*Euphorbia pulcherrima*) is known to us only as a tender pot plant. We love it for its bright red "flowers", which are really not flowers at all but are brilliantly colored modified leaves known as bracts. The true flowers are the inconspicuous clusters of yellow in the center of the bracts, which are often thought of as the center of the "red flower" rather than as flowers themselves. In recent years poinsettias with white or yellow bracts have become popular, but at Christmas time the red poinsettia is the old favorite.

When the poinsettia arrives to brighten your holidays, put it in a sunny location away from drafts, keep it uniformly moist, and allow no sudden changes in temperature. These precautions should give you a maximum period of pleasure from your plant. Sooner or later, however, the leaves will drop. Then, if you wish to keep the plant for another year; relegate it to a cool, dark basement and keep it dry. About May cut the plant back severely, repot in a fairly light soil containing a good proportion of leaf mold or peat and sand, and sink the pot in a sunny part of your garden when danger of frost is past. During the summer the poinsettia requires no special care except to be kept moist. In August, again prune severely. Bring the poinsettia indoors before frost, place in a sunny location, keep moist and at a uniform temperature, and feed about once a

month with liquid manure or commercial fertilizers. Your chances for Christmas bloom from these plants are good, if you are willing to take the trouble to maintain the plant the rest of the year. If you lack the facilities for caring for the dormant plant and starting it on its new growth in summer, why not consider the poinsettia as a temporary thing and enjoy its beauty while it lasts, as you would cut flowers?

WHAT I LEARNED THIS YEAR

Was a plenty because there were many, many things for me to learn and there will be many, many things for me to learn in the years to come. But, working at the Horticulture House with the Herbarium group one cannot help but absorb a few things. One of the things I learned was—a dandelion is not a dandelion in the mountains, it is a *Taraxacum*,—imagine that,—and all my life I have been calling that little yellow pest a dandelion, (and of course a lot of other things not printable). I also learned of the great family called the composite group. I love to hike and fish and what a joy it is to recognize as old friends such plants as the Gentian, the delicate Twin Flower, lovely pink Calypso Orchids, Yellow Arnica, tall airy Meadow Rue and many others.

Yes, I feel I have accomplished a good deal this last year toward learning the wild flowers and look forward to making new friends in the wild flower world while again working this winter with the wonderful Herbarium group at the Horticulture House.

ELIZABETH BAHM.



COLORADO'S BLUE STAR HIGHWAYS

HAVE you noticed the signs along highway 40 for several years, and lately along highway 85-87? And have you noticed the attractive fireplaces made of Lyons flagstone and the picnic tables and trash cans? These are all the result of the work of the Colorado Federation of Garden Clubs as carried out by the Blue Star chairman, Mrs. Frank Neal of Lafayette.

This is a worthwhile movement to create a lasting and beautiful memorial to the boys who died in service and it has also helped to maintain a little interest in the improvement of the appearance and comfort of our highways.

The picture shows one of the newest and best additions to the state-wide system of highway turnoffs which is now being used near Lafayette. As usual much of the actual work has been done by Frank and Ruby Neal.

At a recent annual meeting of the Blue Star committee in the office of the State Highway Engineer the movement was started to promote the

establishing of suitable roadside parks along *all* Colorado's highways. Roads that run through the National Forests and National Parks are adequately furnished with very efficient picnic and camping facilities, but there are hundreds of miles of roads, especially in the east third of the state where there are no facilities whatever to get off the road to rest, picnic or camp. This is our "front door" for the thousands of tourists that we invite to our state and we should surely put out the welcome mat for them by providing suitable roadside parks.

The approved system provides a turnout where there is parking space, good drinking water, toilet facilities, shade, picnic tables, trash cans and fireplaces, spaced at about every 30 miles and often picnic tables and trash cans under a tree at intervals of 10 miles, on well travelled roads.

There has been some difficulty in determining just where the funds would come from for purchase, construction and maintenance of such parks, but other states have worked this out and we can too.

THE ROCKY MOUNTAIN COLUMBINE— OUR STATE FLOWER

BY HENRY GESTEFIELD

WHERE are they? What become of them? Have they vanished like the Buffalo? Should Colorado designate another flower as our State Flower, like the Wild Rose, Cactus, Soap Weed, Dandelion, or Sweet Clover? Or maybe our famous greenhouse product, the Carnation?

Some old timers remember the Rocky Mountain Columbine growing in Grandmother's old-fashioned perennial flower garden, and along dirt roads in the mountains. But now—where art thou? Only hardy mountain climbers get a view of the most inspiring sight below rock slides, near mountain trails at high elevations. Here we see our lovely Columbine—heavenly blue for our Colorado sky and pure white for clean and pure mountain air.

Thousands of our children have heard about our State Flower but have never seen them. Millions of out-of-state tourists look in vain for a sign of the Rocky Mountain Columbine. We could put up signs on highways and by-ways reading, "See the Colorado State Flower; follow trail uphill one-quarter mile through underbrush and fallen timber to rock slide." There they are!

Or we may do as follows, similar to "Johnnie Grass Seed" move: Create a "Native Columbine Planting" program to be sponsored by Garden Clubs, Civic Clubs, Women's Clubs, 4-H Clubs, Schools, State Highway Dept., U. S. Forest Service, Boy and Girl Scouts, Izaak Walton League, Colorado Forestry and Horticulture Association, and others.

Program No. 1: Members of the above Clubs save, gather, or buy Rocky Mountain Columbine seed and

plant same along trails, roadsides and highways all over the state. Pre-water the area to be planted with a pail or two of water. Plant five to ten seeds about a foot apart, cover and seeds about one inch, give one more light watering and cover area with a two inch layer of loose mulch. Good old Mother Nature will do the rest. Planting time is any time you can plant seed in properly prepared soil. Nearly any type of soil that can be pre-watered will do, but it must be covered.

Program No. 2: Raise plants in home gardens; when plants are two years old, transplant seedlings to your favorite roadside. Best transplanting time is in autumn between the first and second snowstorms. Pre-water, don't cramp roots and mulch area around plants. Everything will be all right, providing pesky two legged destroyers leave plants alone.

The reason our native Columbine does not reproduce readily is because seeds must be covered by animal feet or man's hand to germinate. Also many birds and rodents eat the seeds as soon as they are dropped. Unless the seeds are gathered by authorized personnel, the greatest part of the seed is a loss.

Most anyone can spare fifty cents to buy a package of seed. Will you?

Lin Yutang says, "It is more important what one looks out on from the house than what one sees in it."

Good gardens begin with orders to nurserymen that go for the very best stock.

H. F.

BUY TAGGED CHRISTMAS TREES

BY BOB NOBLES

Assistant State Forester

THE sale and regulation of Christmas trees in Colorado is under the jurisdiction of two agencies: United States Forest Service and the Colorado State Board of Forestry.

Trees on federal lands are sold on open bid by the U. S. Forest Service rangers. Trees are cut according to U. S. Forest Service regulations and are tagged with red Forest Service tags.

For many years the State Board of Forestry, through the State Forester, has carried on an educational program for the control of Christmas tree cutting on non-federal lands. Although there are no strict state laws controlling the cutting of Christmas trees and boughs in Colorado, this educational program has gained momentum in the past few years and has merited the cooperation and confidence of the majority of Christmas tree cutters and dealers. When this educational program has been followed, the cutter and/or dealer are issued Christmas tree tags which prove to the public that the trees were cut under conditions promoting good forestry.

When a landowner, cutter, retailer, or wholesaler wishes to cut Christmas trees for future sale, he can make application by mail or telephone to the State Forester, Room 124 Capitol Building, Denver. The application should show the land description and exactly how the cutting area may be reached from Denver. Representatives of the State Forester will make an immediate inspection of the cutting area. This inspection will determine if the cutting will be detrimental to the land, if thinning is necessary, and which trees should be marketed. Following this inspection, a permit will

be issued showing the number of trees to be cut, the landowner's name, and the land description. The cutting can then proceed according to forestry practices outlined by the State Forester.

After the cutting has been made, the cutter will again contact the State Forester. Another inspection will be made of the cutting area. If all cutting has been done properly, Christmas tree tags will be issued for each tree at 2c per tag. Tags will be immediately attached to the trees. The trees may then be removed from the cutting area.

Anyone wishing to sell out-of-state Christmas trees should furnish the State Forester with a bill of sale (or some other evidence) showing the exact number of trees being shipped into the state. The State Forester will issue out-of-state tags (also at 2c per tag) for each tree. This tag will clearly show that the tree was not grown in Colorado. Colorado assumes that cutting inspections were made in the other state prior to shipment to Colorado.

Generally speaking, good cooperation has been given the State Forester in his attempt to regulate Christmas tree cutting in order to assure the protection of our watersheds and forests. Each year more people demand that the Christmas tree they purchase bear a tag showing that the tree was cut according to good forestry and conservation practices. However, there is a definite need for a strict state law which will control Christmas tree and bough cutting all over the state. Every attempt will again be made this year to have such a law enacted by the state legislature.

In order to strengthen the State Forester's educational program and assure proper protection for city watersheds, most of the large cities in Colorado have enacted ordinances

which specifically limit the sale of Christmas trees within the city limits to those trees which bear State Board of Forestry or United States Forest Service tags.

CREATING YOUR GARDEN THE MODERN WAY

Adapted from "Designs for Outdoor Living," by Margaret Olthot Goldsmith,
"Landscape for Living" by Garrett Eckbo.

IN order to make the backyard livable we must first think of it as a six-sided cube of three dimensions, taking in the airspace above the ground.

We begin by partitioning the area for requirements of use, location, and exposure to take advantage of view, slope of land, sunlight, and shade. The partitions may be solid masonry walls, transparent glass, hedges, curtains, or merely the loose suggestion of partitions by a row of trees or posts. These may range in height from the lowest ground cover to the tallest tree.

By interrupting but not blocking the vision of the observer we develop the 'interspatial vista', appreciated from any point in the garden.

* * *

All of this is not enough. The garden must be more than an outdoor living room. It must do things to its possessor—amuse him, stimulate him, delight him, relax him. It must provide him with that revitalizing contact with the growth of plants and the fecundity of the earth, without which man loses his strength and his inspiration. Every visit to it must be an adventure and an experience. Gardens must be the homes of delight, of gayety, of fantasy, of imagination, of

adventure, as well as of relaxation and repose.

* * *

Good modern style in house or garden means avoiding copying some era in the past in externals. It means adhering in house and grounds, in plan and materials, to what your own manner of living and your site demand.

Modern homes relate house and garden, suit both to taste and habits of the owner, fit them skillfully to the contours of the ground, create balance without symmetry. A modern garden pays as much attention to proper enclosure (fences) and to both overhead and underfoot structures (platforms, pergolas, pavement and walks) as to well-placed flowers and "flowering" shrubs.

* * *

"The true test of skill is in the arrangement." A rear garden has a need for greenery, a place to sit or stroll, play space (recreation) and sometimes for utilitarian features, such as clotheslines and ashpit or incinerator. The small-garden secret is that by giving your eye and mind something to follow through the area, both at ground level and in the upper spaces reached by vines and tree branches, you feel the distance is greater from end to end or across than if you take it all in at a glance.

Gleaned by
M. WALTER PESMAN.

GOOD FRUIT FOR EASTERN COLORADO

BY HERBERT GUNDELL

A fruit tree, can provide much beauty, joy and utility to the home gardener. It provides not only fruit, but sometimes also shelter for birds, shade and enhancing beauty. There is grace in the lines of a well cared for fruit tree, even in the winter months when little life can be detected out-of-doors. In spring the fruit tree gives us some of the early colors we so long to see, the beautiful white and pink shades of the blossoms. In the fall we enjoy its delicious fruit with rich yellow, gold, red, blue and green coloration. Even a few fruit trees can provide an often necessary background to a beautiful and enjoyable garden. That is why the selection of fruit trees should perhaps be as careful as that of a mahogany dining room set or some exquisite silverware. Home gardens in the city often are limited in space. The selection of the fruit tree, therefore, is of great importance. In many cases, available space provides room for only one or perhaps two trees; in which case, the writer would suggest the selection of either an apple or a sour cherry, or both.

A Montmorency sour cherry is probably one of the most successful fruit trees in this area. It will withstand a good deal more sub-zero temperature than most other fruit trees. It is also quite drough-resistant and of a semi-dwarfed growth habit. It blends very successfully with the architectural lines in the 1950's.

If there is sufficient space for one large tree or perhaps a smaller and a larger tree, a good apple variety is always a rewarding selection. Many good apples can be determined by their general popularity throughout this area and the United States. The selection of an apple will have to de-

pend therefore pretty much on the personal preference of the home gardener. To mention a few popular varieties most people will select: Red Delicious, Winesap, Jonathan, Golden Delicious, Northwestern Greening, and Rome Beauty. A description of these varieties will follow immediately.

Red Delicious: Very resistant to fireblight (a bacterial disease), a good pollenizer, but self-unfruitful (self-unfruitful apple trees require a pollenizer tree within the same garden or immediate neighborhood). Bear at 5 to 8 years of age.

Winesap: Very resistant to fireblight, but a poor pollenizer and self-unfruitful. A Winesap therefore will not pollinize a Red Delicious. Bear at 6 to 8 years of age.

Jonathan: Very susceptible to fireblight, slightly self-fruitful and a good pollenizer, subject to winter injury as young tree. Bears at 4 to 6 years of age.

Golden Delicious: Very susceptible to fireblight; self-unfruitful but a good pollenizer; subject to winter injury as young tree. Bears at 4 to 6 years of age.

Northwestern Greening: Susceptible to fireblight, self-unfruitful, and a poor pollenizer, but very winter hardy. Bears at 5 to 8 years of age.

Rome Beauty: Susceptible to fireblight, a good pollenizer, but only slightly self-fruitful. It matures late in the season. Bears at 4 to 6 years of age.

Many other less popular apple varieties deserve mention because of their hardiness, such as Red June, Dutchess, Red Sheriff, Cortland, and Haralson.

Where garden space is abundant the use of an early-bearing and early-maturing apple variety is often desirable. *Yellow Transparent* is per-

haps the most popular early apple, but rather by nature of its earliness than by virtue of any other quality. It is very susceptible to fireblight injury, but a good pollenizer and partially self-fruitful. *Early McIntosh*, a hybrid between Yellow Transparent and McIntosh, may eventually replace Yellow Transparent because its fruit resembles a McIntosh and stores better.

Another fruit tree of great merit is a good plum. It provides a good crop of fruit practically every year and lends itself not only for table use but also for canning and the preparation of jams and jellies.

Stanley resembles the Italian plum in color, but is quite hardy. It bears a good crop almost every year, is self-fruitful and a good pollinator for other European plums. The fruit is a freestone and cans well.

Superior and *Waneta* are very hardy and prolific red varieties which seldom fail to reward for the small space they occupy.

Kaga is a wine red plum, very hardy and a good pollinizer. It cans exceedingly well.

Under very severe climatic conditions *Opata* and *Compass* have proven of value. All plums bear at 3 to 5 years of age.

It would be unfair to bypass the less hardy tree fruits without some explanation. Peaches for north-eastern slope conditions are generally regarded unsatisfactory. They bear a fine crop when conditions, frosts and winter freezes permit, but not often enough to warrant the space they occupy in a restricted garden area. Whenever the use of garden space is inconsequential, it might be well to try *Polly*, a more hardy kind, or *Elberta*, one of the more reliable of the non-hardy types.

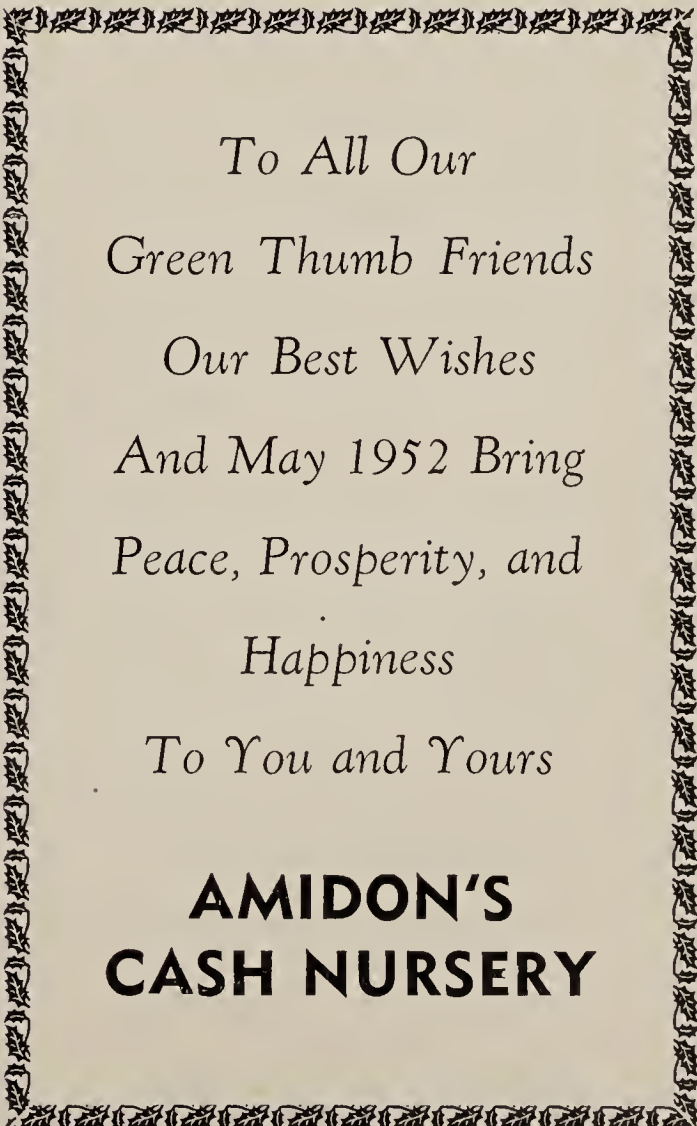
Pears are seldom recommended because they are not very winter hardy

and extremely subject to fireblight injury. *Gorham* is probably least susceptible to fireblight; therefore, a more likely choice.

Apricots bloom very early and rarely escape frost injury. Few crops can be expected in an apricots' lifetime. It is therefore unwise to recommend them.

Sweet Cherries are also very tender and suffer from too many failures for honest recommendation. In addition most sweet cherry varieties are self-sterile and inter-sterile and require special pollinator trees, a matter too complicated for home fruit gardening.

Anyone may plant any type of tree that they desire. From a standpoint of satisfaction over a long period of years, the home gardener who stays with sour cherries, apples and plums may expect much delicious enjoyment from his fruit garden.



To All Our
Green Thumb Friends
Our Best Wishes
And May 1952 Bring
Peace, Prosperity, and
Happiness
To You and Yours

**AMIDON'S
CASH NURSERY**

THE WAR OF MAN VS. BEETLE

In the Engelmann Spruce Forests of Colorado

BY DON BLOCH

UNLESS a reversal of present infestation trends occurs, 1951 is seen by the Forest Service as the year in which the tide has turned in the 10-year old Engelmann spruce beetle epidemic.

Since 1942, when the epidemic was first discovered, 4.3 billion board feet of timber has been killed by the invading insects. The purpose of the continuing program is to save the 15.5 billion board feet still green and growing in the path of the beetle.

In two summer set-tos with the insects, a total of 983,000 attacked trees have been treated—784,000 of these in the 1950 season, the remainder this year. Over a million gallons of insecticide were sprayed in the 52,000 man days of labor expended in last year's program; about 377,400 gallons in the 15,800 man days of labor in 1951.

Original surveys by the Bureau of Entomology and Plant Quarantine, during the summer of 1950, indicated that about 1½ million trees needed treating this year to halt the epidemic. Natural forces combined that winter, however, to permit a lowering of sights on this objective: an extended deep freeze caused heavy insect mortality above snowline; and woodpeckers in unusual numbers were also good allies against the beetles. These factors, together with the treating program of 1950, brought the total down to 400,000 trees that needed treatment—a greatly reduced program, but one entomologically sound.

A late start—due to delayed appropriations—together with labor and climatic handicaps, forced stoppage of the project about halfway of its goal. In spite of disappointments, however,

the control program of '51 was, in the words of its director, C. T. Brown, "a good boost in the direction of next year's program."

The 1952 campaign, for which an appropriation of \$1,800,000 is being recommended, higher wages, other increased costs, and the scattering nature of much of the infestation indicates a probable treating cost of about \$4.50 per tree—calls for the treatment of 400,000 trees—175,000 1950-52 attacked, and 225,000 1951 attacked. This figure represents an approximate 87 per cent reduction in the 1950 survey figures of 1,500,000 1950 attacks, principally as a result of last year's control work coupled with the 1950 freeze and with increased woodpecker work. These trees are located in 18 separate areas of infestation in the regions nearby Eagle and Kremmling, Colorado. Thirteen camps are indicated—six near Eagle, the rest near Kremmling—which will be manned by a total force of 470 men. Equipment is already on hand for these camps, including that for four mobile 10 and 25-man camps, a 1952 innovation that will make for flexibility and utility of operation.

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LEAF DROP OF EVERGREENS

Reprinted from Shade Tree Digest

THE word "Evergreens" is a descriptive term generally used in speaking of such trees as Pines, Spruces, Cedars, Firs and Junipers. It is a misnomer if we think of it as applied to the individual leaves or needles of these trees. For evergreens, like broad-leaved trees, shed their foliage. In contrast with the broad-leaved species, however, evergreens seldom shed all of their leaves at once. The shedding process is gradual, and therefore less noticeable, but one needs

only to walk through a pine or spruce forest and observe the dead needles covering the ground to realize that leaf-fall is a normal occurrence among evergreens.

The individual leaf or needle remains attached to the tree for a rather definite period of time, which varies with the species. For example, on Arborvitae the needles usually persist two years, on white pine, two or three years; on jack pine, four to six years or occasionally longer; and on spruce,

seven to ten years. New foliage develops each spring, however, which keeps the tree "ever-green". This new foliage is lighter in color than the older needles, but darkens as summer advances. Usually, the greatest amount of foliage-browning and needle fall occurs in the late summer or early autumn. Leaf fall in greater abundance can be expected after a dry summer than when normal rainfall occurs.

Evergreens, of course, are subject to insect pests, diseases, and injuries of various kinds, any of which may cause abnormal leaf fall. If autumn browning of needles and subsequent defoliation appears to be excessive, the wise homeowner will promptly consult his arborist.

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NEW SERVICE FOR WOODLAND OWNERS

BY DAVE MINISTER
State Service Forester

IN January, 1951 the first Colorado Service Forester was employed by the Colorado State Board of Forestry in cooperation with the United States Forest Service.

Private woodland owners are given technical assistance on their woodland management problems by a college-trained forester. This assistance includes advice on harvesting timber, thinning and pruning timber, insect and disease control, and marketing and processing timber.

There is no charge to the woodland owner for these services. The cost is carried jointly by the State and Federal governments. However, in the event these problems are extensive in nature, the owner is referred to a private consulting forester so that there will be no competition between the Service Forester and consulting foresters in private business.

The Service Forester is a state employee within the office of the State Forester. Since this service was established, the Service Forester has been stationed in the Black Forest—eighteen miles north east of Colorado Springs. Although the services of this forester are available throughout the state, work has been concentrated in this 120,000-acre, forested area because it is predominately privately owned. Also, it is a vital watershed influencing both Denver and Colorado Springs. A great deal has been accomplished in this area because both landowners and sawmill operators have seen the necessity of adopting improved cutting practices and a system of slash disposal to lessen the post-logging fire hazard. Since this service was inaugurated, several thousand acres of vital timber and water-

shed lands have benefited through improved timber management practices.

It is the hope of the State Board of Forestry that more people in the state will take advantage of this new service. Anyone interested may obtain further information from Mr. Everett J. Lee, State Forester, Room 124 Capitol Building, Denver.

Perhaps many of you woodland owners have been looking for assistance of this nature.

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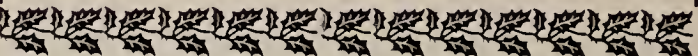
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THAT SHADY SPOT

BY GERTRUDE BALLINGER

HAVE you an area around a tree that would provide high shade and where the ground may be cultivated? If so, you have the location that may be a bouquet of color from very early spring until fall frosts.

For earliest bloom, daffodils planted ten to twelve inches deep with good drainage provided, and tulips planted at least eight to ten inches deep, also well drained, will give you a parade of color lasting until the tree has leafed out.

Then comes the summer display. Plant tuberous begonias between the maturing foliage of the tulips and daffodils in early June. They will quickly hide the old foliage and begin rewarding you with such perfection of form and color of bloom as seems too beautiful to be real.

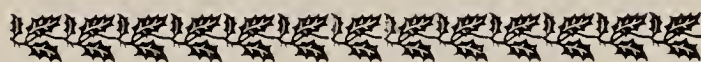
Since the begonias are shallow rooted, a rich top dressing of well rotted manure with some peat moss mixed in to hold moisture, and a fine spray of water applied two or three times daily will assure an abundance of beautiful flowers throughout the remainder of the summer. If there is a prevailing wind through that area, provide a windbreak of plant material or erect a low ornamental picket fence as a border and an added protection against stray dogs running through the tender plants.

Careful planning, careful planting, good soil and frequent spraying of the begonia foliage will pay big dividends. In the fall, after the foliage has been killed by frost, dig the bulbs, cure them for two or three days in the sunshine (covering them on the ground at night), then dry them thoroughly in the basement. Remove the dirt and store them in clean dry peat moss in a cool place until time to

repot them in a warm, sunny room in April. By June, the plants should be starting to bloom, so when they are transplanted to the outdoor bed the color display is ready to start again.

YOU ARE NOT FAMILIAR WITH PLANTS?

If you are new at gardening and are worried about how to get started, try the following perennial plants: Delphiniums, Foxgloves, Forgetmenot, Columbine, Peony, Phlox, German Iris, White Lupine, Hardy Pinks (*Dianthus plumarius*), Phlox divaricata, Chrysanthemum, Blue Lupine, Gaillardia. Alyssum sax. citrinum, Elder Daisy and viola. These plants will keep your garden gay and cheerful with a minimum of expense. H.F.



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NOTES FOR DECEMBER

BY HELEN FOWLER

Broken tree branches should be removed

Broken branches ought to be removed from the trees immediately, if they are still partly attached to the point of breakage; otherwise they may rip away good wood as they swing in the wind. Neglect of this removal may lead to serious harm coming to the tree.

Paint Tools now for preservation

A good coat of paint is practical life insurance for the wooden parts of all garden implements; and too, it may aid identification if the tools happen to be borrowed by neighbors, especially if you choose some really aesthetic color, such as mauve, baby-blue, or ashes of roses.

Dormant Sprays should be applied at the right time

There is not much use trying to apply dormant sprays when the thermometer is below freezing or there is a high wind. Wait for favorable weather,—warm, clear and with no more than a light breeze blowing—but take advantage of the first opportunity.

Cocoons should be removed

You will find them in the crevices of tree bark, in pieces of old boards and other crannies. Many would hatch into harmful insects. A wire brush is the safest tool to remove cocoons from tree bark without injuring the trunk.

Flower Lilies-of-the-Valley in the house

Lilies-of-the-Valley are easily brought to flower in the house, if planted in bowls of special fiber, ob-

tained at our seed stores. Get cold-storage "pips" or dormant plants from any good florist, snip off the lower two-thirds of their roots and plant so that the tips of the eyes are just showing.

How to mulch flowers

When mulching Peonies with manure, do not cover but just a bit, the actual crowns of the plants. To neglect this precaution means running the risk of having the roots rot, to say nothing of their shoots probably failing to bloom because their eyes have been too deeply buried.

Proper time to add garden mulches

When the ground has frozen hard, and not before, it is time to put on the winter mulches. Keep in mind the purpose of these coverings—to hold the frost, not exclude it. If applied too soon there is danger of field mice nesting in the mulch and burrowing beneath.

WILSON'S LAST BOOK

When the late Ernest H. Wilson turned from his study one day in the autumn of 1930 to go, on that rainy day, on the holiday that ended so tragically, he left on his desk the manuscript of a book. Today it appears under the title of *IF I WERE TO MAKE A GARDEN*. Included in the book are a memorial introduction and a portrait of Dr. Wilson. Perhaps this volume is his most valuable contribution to gardening literature. He tells what he would do if he were again to start a garden. This volume is on the shelves of the library at Horticulture House and we recommend it as one of those necessary garden books.—HELEN FOWLER.



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S. R. DE BOER OFFERS
A VALUABLE PREMIUM
FOR NEW MEMBERS

A valuable inducement for new members has been made by S. R. DeBoer who has been a director of the Association for many years. This consists of a folio of landscape plans for front yards in the area. There are 8 different plans which can be adapted to almost any type of house or grounds. These show appropriate arrangement of suitable plants for this climate. If these were drawn up individually they would probably cost \$50.00 each.

Mr. DeBoer is doing this for two reasons: to stimulate better landscape design and make a more beautiful state to encourage gardeners to become members of the Association.

To limit these valuable plans to those who will really appreciate and use them, and save mailing cost only one restriction is made: that those who bring in new memberships or renewals come in and get the plans at Horticulture House. They are bulky and difficult to mail, but those out of town can request them by mail.

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DECEMBER GARDENING

WINTER protection is the keynote of garden work in December. When the cause of most of our winterkill is understood to be our hot winter sun and dry air, it is then apparent that our chief concerns should be to see that the ground around all plants is sufficiently wet before it freezes up and that tender barked trees, tender evergreens or borderline shrubs have some shading from the severe southwest sun.

* * *

Check over the stored bulbs once or twice this month. Most of these bulbs will keep best at a temperature around 40-45. Gladiolus need little moisture, Cannas will almost take care of themselves if some soil is left around them, but dahlias are rather particular as to temperature and moisture. If they show signs of shrivelling when inspected, a moist sack thrown over them will help. If they show mould or rot they may be too wet and if they sprout they may be both too moist and warm.

* * *

While you are checking things, look over the house plants again for signs of the start of aphids, spidermites, scale, thrip or mealybug. Again, an ounce of prevention is surely worth many pounds of cure.

* * *

Each rose grower has individual methods of protecting his tender roses but the method of hilling soil up around them to a distance of six inches or so seems to give rather universal satisfaction. This should be done between the time that the leaves fall and the ground freezes (which in some seasons is a difficult period to determine).

* * *

Shrubs and trees which have low hanging limbs likely to interfere with walks when heavily laden with snow should be taken care of now. This may prevent some breakage to the tree and save someone's temper on a crisp snowy morning. Tall, slim junipers should be checked to see if they might be braced back to a building or another tree to prevent their being bowed down or broken by heavy snow.

* * *

One of the most important garden operations of the season may be done while plants are dormant and weather is still fairly warm. This is the dormant spray for the control of scale insects and control of certain other spiders, galls or aphids. Lime-sulphur or miscible oil is commonly used and is a technical job requiring careful mixture and application by adequate equipment if the trees are at all large.

* * *

When the plants outside in the garden are dormant our attention is directed to the plants that we are able to bring indoors. At the holiday season these bright spots of green and color are especially appreciated. Success with these plants depends very largely on careful attention to the proper soil to pot them in, to careful watering and regulation of the humidity in the air. If more than the succulants and hardiest plants are attempted it is well to provide additional humidity by having a teakettle on a stove, register or electric plate a few hours of the day at least.

Now that the active growing season is over landscape men are available to do the extensive jobs of removing crowded or dead trees and to do the thorough jobs of trimming and caring for shade trees. It is recommended that Maples, Birch and Walnut trees be not trimmed until they are in leaf again as they are inclined to "bleed" rather badly when trimmed during their dormant period.

* * *

Garden construction work can now be done without interference with growing plants. Paint the fence, level up the stepping stones, repair the gate or build that new pool that you have wanted for years. Porch boxes may be repaired and trellises replaced. Soil improvement may be done by spading in humus if the ground has not yet frozen up.

* * *

Last year as you worked with your plants in the garden did you not often wish that you knew more about the many things concerned with horticulture? Now is the time to look up books and bulletins on the new insecticides, the latest advances in fertilizers, and the new varieties of your favorite plant and the principles of landscape design.

* * *

Horticulturists should not have to worry long over their Christmas lists for other gardeners. Bulbs, seeds, tools and books offer unlimited possibilities. And most any good nurseryman will arrange for you to give a Christmas order for those plants which must be moved in spring. Garden magazines are always welcome.

* * *

Whenever you have a suitable tree, it is a fine thing to decorate a living tree for Christmas. Many plant a Spruce or Fir in a suitable location for that purpose. A well decorated outdoor Christmas tree gives pleasure to many people going by and helps to prevent the overcutting of forest trees for temporary indoor use.

SHRUB ARISTOCRATS

The *Viburnum* family is one of aristocratic shrubs. While they vary in color, all of them are beautiful in foliage, flower and fruit.

The old-fashioned Snowball is the most widely known of the *Viburnums*. It is just a sophisticated child of the Highbush Cranberry that produces ball-shaped flowers and no fruit. Very much unlike the Snowball and other *Viburnums*, the Wayfaringtree has rather thick gray-looking leaves. Its fruit turns in the summer from green to yellow, then red and finally black. The Nannyberry has similar blooms but thin green leaves and large black berries. Producing small blue-black berries and with teeth-edged leaves, the Arrowwood is hardy and does well in the shade. Japanese *Viburnums* are not usually considered hardy in the Rocky Mountain region.

Where a tall shrub is needed one of the aristocratic *Viburnums* may be used effectively.

